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A STUDY OF USCG SURVEILLANCE REQUIREMENTS OVER THE NEXT. 25 YEARS AND DEVELOPMENT OF A SURVEILLANCE R&D PROGRAM



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UNITED STATES COAST GUARD
OFFICE OF RESEARCH AND DEVELOPMENT
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M. J. /Cetron, C. F. /McFadden, O. H. /Landua, S. E. /Sugarek R. A. /Ferraiolo **Technical Report Documentation Page** 2. Government Accession No. 1. Report No. 3. Recipient's Catalog No. CG-D-10-79 (APPENDICES) Title and Subtitle A Study of USCG Surveillance Requirements Over the Next 25 Years and Development of A Surveillance RAD Program. Volume 2. Appendices. 8. Performing Organization Report No. S.E.Sugarek, R.A. Ferraiolo, M.A. Freese, N. Nisenoff, M.A.Clayton 10. Work Unit No. (TRAIS) 9. Performing Organization Name and Address Forecasting International, Ltd. 1001 North Highland Street, P. O. Box 1650 Arlington, Virginia 22210 DOT-CG-836036-A 12. Sponsoring Agency Name and Address Final Commandant (G-DSA-3/TP44) 2978-Apr#1 1 U. S. Coast Guard 14. Sponsoring Agency Code Washington, D. C. 20590 15. Supplementary No. D-18-79-VOL-2 16. Abstract The objectives of this study were to provide a multimission assessment of possible Coast Guard surveillance requirements over the next 25 years in 5-year increments; and to develop a Coast Guard surveillance R&D program. The recommended program was to consider likely future demands on USCG surveillance capabilities and develop a time-phased program which would allow the Coast Guard to respond to changing demands in a timely fashion. Thus the first phase of the analysis concentrated on identifying and assessing the impact of future trends and events which could affect surveillance requirements. A list of potential events relevant to Coast Guard surveillance requirements was developed. These major events were then evaluated via a Delphi, with the participation of experts in a variety of appropriate fields. The Delphi panel established estimated dates by which each event would have a high probability of occurrence. A Requirements Model was then constructed to quantitatively assess the time-phased, relative importance of each of the identified current and future Coast Guard surveillance requirements, by Program and overall. Once the relative importance of each surveillance requirement was established, a survey of current and future available technology was undertaken, to determine current development status, current level of application, pace of development, efficacy in meeting each surveillance requirement. Using cross-relevance matrices, a gap analysis was conducted to determine the efficacy of the technologies, as currently applied and potentially available, in meeting the most important surveillance requirements. The result was a determination of the relative importance of the technologies for Coast Guard research and development. A broad program was then structured utilizing the output of the gap analysis and insights gained during the evaluation of technologies. 18. Distribution Statement 17. Key Words Surveillance Requirements Surveillance Technologies Technology Transfer R&D Planning Remote Sensing 20. Security Classif. (of this page) 19. Security Classif. (of this report)
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APPENDIX A

TRENDS AFFECTING FUTURE COAST GUARD SURVEILLANCE REQUIREMENTS

I. Environmental Trends

- Increasing public and government awareness and planning in terms of environmental consequences and implications of all acts (2, 1, 4).
 - Regulations from agencies like EPA becoming broader in range and application (3).
 - Probable establishment of international environmental quality standards for air and water (1).
- Changing approaches to issues of environmental management as a consequence of increasing knowledge base (2, 3).
 - Increasing knowledge base is expected to increase predictive, preventive, and reactive capabilities (3).
 - Shift in approach from remedial to preventive measures (2).
 - Greater emphasis is expected on regulation and enforcement of regulations (1).
- National and global needs for energy and materials may be in conflict with environmental concern (2, 4).
 - a. Environmental disruptions are expected to become a rapidly increasing factor of conflict and tension in international relationships (2).
 - Waste management is expensive. As a result, less developed countries and less efficient businesses have difficulty facing environmental controls (3).
- 4. Accidental and incidental waste disposal in oceans may receive more attention (2).
 - a. Increasing control and regulation of ocean dumping.
 - Increasing control over cleaning of vessels and effluent pumped overboard (3).

- 5. Expected increase in shipment of environmentally hazardous materials, such as chemicals and oil, will increase the danger of environmental pollution (5).
- Increasing awareness of environmental impacts of energy extraction.
 - a. Nuclear electric power plants will result in increasing amounts of thermal pollution and accidental discharge of radioactive compounds (2, 4).
 - Increasing numbers of oil drilling platforms are anticipated (1).
 - Deep sea mining is expected to increase
 (1).
- Environmental trends in coastal zone management may affect USCG pollution abatement responsibility (4).
 - a. Increasing amounts of superstructure construction within coastal zone (4).
 - Increased recreational activity in coastal zone (4).
 - Anticipated growing need for protection of fisheries (4).
 - d. Possible use of zoning concepts and "protected areas" to serve as preserves of the natural state for purposes of scientific and technological development (3).
 - e. Increasing demand for mineral resources (4).
 - Growing need for enforcement of regulations concerning extraction of offshore mineral resources (1).
 - Increasing numbers of mariculture ventures (1).
- Increased incidence of oil spills may create significant environmental hazards (5).

II. Political Trends

- Increasing political change is expected resulting from a quest for materials (energy-producting, food, minerals) (5).
 - Increasing alliances and agreements which may be both stabilizing and destabilizing (5).
 - Increasing number of global "concerns", (such as international regulation of sea resources) (5).
 - c. Possible conflicts over ownership rights in regard to scarce materials (2).
- Conflict is anticipated over development of ocean regime.
 Many unresolved issues include: pollution, fisheries
 conservation, freedom of navigation, territorial
 and economic zone boundaries, sea-mining and Law of Sea
 Treaty (1, 2).
- Increasing potential for armed conflict and/or terrorism (1).
 - Increased potential for armed conflict or warfare in general (5).
 - (1) New step-up in U.S. arms race (2).
 - (2) Increasing acts of international terrorism (1).
 - (3) Further development of weapons systems (1).
 - b. Increasing potential for armed conflict related to marine environment.
 - (1) Increasing arms sales related to marine environment (4, 2).
 - (2) It is expected that major sea control forces will be used to protect access to deep ocean resources (5).

- 4. Coastal zone management issues.
 - Possible jurisdictional controversy between various levels of government over management of coastal zone (2, 3, 4).
 - (1) Intra-Federal controversy
 - (2) Federal/State controversy
 - (3) State-State controversy. Variations between state laws may become increasingly difficult to accommodate. It is possible that some form of national standardization will occur (2).
 - Possible controversial issues in regard to traffic and control (2).
 - (1) A questioning of free right of access and passage may result in possible impedence of commercial navigation (2, 4).
 - (2) Increasing problem of traffic control in domestic waterways may occur (1, 2).
 - (3) Increasing number of foreign vessels may continue into domestic waterways (1, 2).
 - Possible development of sea zoning and allocation systems (2).
 - (1) Possible jurisdictional controversy over breadth of continental shelf (4).
 - (2) Possible conflict over unequal distribution and exploitation of sea resources may lead to disagreements concerning their ownership and extraction (5, 2).
- 5. Treaty law enforcement issues.
 - Law of Sea Treaty may become ratified (1).
 - Clarification and development of U.S. responsibilities in Arctic areas may occur (1).

- (1) Polar warfare issues (1).
- (2) Clarification of the specific responsibilities of the CG in Arctic areas in regard to facilitation of commerce, search and rescue and national defense (1).
- 6. Government management issues (not limited to coastal zone).
 - a. U.S. government agencies are expected to reorganize more frequently. This may result in more organizations overall, and changes in existing organizations (1, 2, and 5).
 - b. Domestic political activities will include issues concerning drugs and the environment. For example, the political impact of environmental groups will increase, and political changes may affect whether drugs will be legalized, etc. (5).
 - Possible problems with sustainability of voluntary, nonunionized military forces (2).
 - Increasing governmental regulation of industries (5).
- 7. Development of military use of coastal zone.
 - a. The traditional military view that large marine bodies constitute defensive barriers (the moat view) will increasingly give way to the view that the marine bodies are a form of cover which make certain types of defense even more difficult (2).
 - Growing technological advances in new marine defense strategies are expected (2).

- 8. Unresolved issues relating to development of fisheries and the enforcement of fishing (1, 3).
- Issues relating to increasing emphasis on trade and shipping.
 - Increased shipping capacity is expected
 (1).
 - b. Growing need for construction standards for foreign vessels (1).
- Legal and jurisdictional conflicts may emerge related to mineral extraction (1).
- 11. Protection of nation's borders from illegal entry (1, 3).
- 12. Possible changing policy of CG military role.
 - a. Protection of 200-mile economic zone from terrorism (1, 4).
 - b. Crime and law enforcement role of CG within 200-mile economic zone.
 - (1) Port security problems (1).
 - (2) Brush fires (1).
 - (3) Inspection standards for foreign ships (1).
 - c. CG crime and law enforcement role outside of 200-mile zone, including smuggling and hijacking may be redefined (1).
 - Prevention and safety operations may change (2).
 - (1) Anti-terrorism and antisaboteur operations (1).
 - (2) Surveillance and enforcement of public safety (2).

III. SOCIETAL TRENDS

- Rising affluence is expected and may result in increasing sophistication, sexual equality and service orientation of U.S. labor force (5).
- Expected long term increase in amount of leisure time (4, 2).
 - Increase in recreational activities in general (4).
 - Increase in leisure-recreational-related expenditures (4).
 - c. Increase in recreational marine activities and expenditures. Increasing use of submersibles for private and commercial use (4).
- 3. Expanding population is expected (1, 4).
- Possible continuing geographical shifts near water, such as coastal areas, inland lakes, Great Lakes and rivers (1).
- 5. Increasing crime of all kinds is expected (2, 3).
- Possible lower societal priority for military and paramilitary may result in social pressures to reduce
 manning of military or para-military services (4).
- Increasing use of drugs and an increase in drug traffic (1,4).
- Continuing growth of recreational use of marine environment (3).
 - Greater use of boats and submersibles for private and commercial use (1).
 - b. Greater need for law enforcement (3).
 - (1) It is anticipated that greater surveillance requirements related to drug traffic and other contraband by water will be necessary (2).
 - (2) A greater need for protection against antisocial technologies is expected (3).

- 9. Increasing construction and use of offshore structures.
 - Possible inhabitation of permanent installations (such as underwater parks for tourism)

 (1).
 - Possible use of private submersibles for research, mineral exploitation, underwater commercial operations (1).
- 10. Societal trends related to coastal zone management issues.
 - a. Increased regulatory responsibilities relating to recreational activities and non-recreational activities (1).
 - b. Law enforcement and prevention of crime(3).
- c. Crowding and congestion in coastal and territorial waters may present problems of movement control (3).

IV. Economic Trends

- Growing interdependence of world economy is expected (5).
 - Dependence and competition for national resources may occur.
 - (1) Shortages of raw materials may result in increased trade for foreign sources and markets (5).
 - (2) Increasing value of marine resources may increase the economic stake of ownership rights to marine resources (3).
 - Possible continued growth of multinational firms (5).
- Shortages in raw materials may result in growing dependence upon international trade (1, 5).
- 3. Possible protectionism issues.
 - a. Rising problem of U.S. economy's capability to compete favorably in international markets may give rise to issues of protectionism and international trade agreements (3).
 - Possible increase in protectionist attitudes and measures (5).
- 4. Possible increasing capital constraints in U.S. (5).
 - Expected increasing competition for U.S. government funds (5).
 - b. Increasing demands for capital funds to meet increasing costs may not be met. As a result, the CG may not have sufficient funds to repair, upgrade and expand port facilities (1).
- 5. U.S. economy is expected to become increasingly dependent upon foreign sources for raw materials (2).

- 6. Increasing emphasis for offshore development (3).
 - a. The probable need for self-sufficiency in terms of resources may accelerate offshore resource development (3).
 - U.S. resource needs may lead to exploration of deep sea resources (3).
- 7 Some coastal zone management issues.
 - a. Increasing pressures to assure open navigatability of all important waterways (inland and oceanic access) year round (1, 2).
 - Protection and law enforcement issues in economic zone.
 - Possible foreign infringements in U.S. economic zone (4).
 - (2) New regulations may give USCG additional responsibilities in the inspection of offshore equipment such as drilling rigs, nuclear power plants, and other offshore assets (1).
- 8. Increased shipping and waterborne transportation is expected (1).
 - a. Expected increased demands for improved shipbuilding technology of a commercial nature (3, 2).
 - b. Increasing number and size of vessels (4).
 - Increased use of domestic inland waterway system (1).
 - d. It is anticipated that problems may arise associated with an internationally dispersed shipbuilding industry without related internationally agreed upon equipment standards and enforcement procedures (3).

- e. Expected increase in the number of problems related to cargo inspection for permissibility and legality (3).
- f. Possible need for control of entry to vessels into certain areas as a result of concern for safety against antisocial technologies (3).
- g. Increasing imports of crude oil, products and natural gas may require more and larger ships (1, 2).
- 9. Issues related to the exploitation of coastal zone.
 - a. Exploitation of the ocean for materials such as ocean mining, etc. may increase CG economic zone security requirements (4).
 - Some energy extraction trends may increase
 CG economic zone security requirements (4).
 - Possible exploitation of the ocean for oil and gas is expected (4).
 - (2) Possible offshore location of power plants (4).
 - (3) Many new energy plant facilities may continue locating on waterside sites to use low cost water transportation (1).
- 10. Greater reliance may be placed on the ocean as a food source (4).
 - Development and protection of open sea mariculture is expected (4).
 - b. Possible development of kelp beds (2).
 - c. Expected growing need for protection of fisheries from over fishing (4).
- Continued worldwide economic growth and development is expected (2,5).
 - Continued rising GNP in both developed and developing nations is expected (5).
 - Increasing disparity of per capita income between developed and lesser developed nations may continue (5).

V. Technological Trends

- Increased general stimulation of technology and innovation is expected.
 - U.S. may not be able to maintain technological leadership (2).
 - Technological advances allowing prediction and control of weather are being developed (5).
 - Advances in oceanography may broaden opportunities to exploit ocean resources (2).
- General engineering improvements may include advances that
 make machinery less susceptible to environmental extremes.
 (Steel alloys that produce adherent oxides which improve
 weatherability may be developed.) (2).
- 3. Satellite utilization trends.
 - Satellite computer systems may proliferate to produce computer networks (2).
 - b. Improvement of intelligence-gathering effectiveness from satellites by means of development of photographic techniques may be developed (2).
 - c. Further development of IR techniques is anticipated (2).
 - d. It is expected that SEASAT-satellite will provide all-weather global monitoring. It may also be used for surveillance of chemical and oil pollution, location of ships, yields of fish, and wave and weather conditions (4).
 - e. Evolution of comprehensive monitoring systems and identification systems is expected. Satellite tracking is becoming more useful to monitor ships for pollutant identification (3, 4).
 - f. The possibility exists of orbiting space stations which can serve as nuclear launching platforms, surveillance stations, etc, (2).

- 4. Trends in geological identification techniques.
 - a. It is expected that advances in geological sciences and space monitoring may provide the capability to locate yet unknown resource reserves (2).
 - b. It is expected that the development of high precision of macro-measuring techniques may facilitate construction of geological maps of OCS shelf (4).
- 5. Computers and cybernetics (1).
 - General engineering developments in the field of computers and cybernetics.
 - (1) Improvement of visual and audio data input techniques (2).
 - (2) Expansion of large scale integrated technology multiplexing may enable multiple uses and intercomputer interaction (2).
 - (3) Expected increase in speed and data handling of computers (2).
 - (4) Possible increased use of microcomputers (2).
 - (5) Possible increase in security capabilities in the time-shared systems (2).
 - (6) EDP systems are becoming increasingly capable of performing simultaneously a variety of different functions (2).
 - (7) Development of flexible small software packages for use in solving layman-language problems are expected (2).
 - Possible general uses of computers and cybernetics in other areas.
 - Computer simulation may be used in construction of hardware entities, such as large engineering projects (2).

- (2) Cybernetic systems may be developed to replace many human-machine systems, such as navigation, assembly lines, weapons, construction (2).
- (3) Computer and sensor technologies may be applied to problems of mine safety (2).
- 6. Expected development of port facilities and floating cities.
 - a. Problems relating to port facilities may arise.
 - Development of waterfront facilities for handling hazardous materials may occur (2).
 - (2) Possible development of port management vessel traffic services and information systems (2, 5).
 - (3) Possible development of port facilities for larger ships (2).
 - b. Growth of sea communities and other types of offshore facilities.
 - (1) An increase in number of offshore facilities (excluding petroleum drilling operations) is expected (5).
 - (2) Possible growth of surface-type facilities. Ocean platforms may be used for: large sea stations for airports, shipping terminals, floating plants and cities, deep water ports and power plants (5,2).
 - (3) Expected development of sub-surface operations for industry (mining, food) and recreation (underwater parks) (2).
- Food production from marine sources is expected to increase (2,5).
 - Mariculture is expected to become a major industry (4).
 - b. Application of surveillance/monitoring technologies to fisheries are expected to permit determination of accurate inventories of stocks of fish (2).

- c. Water desalination is feasible (2).
- 8. Technological advances in mineral extraction are expected to lead to increases in offshore/deep-sea mining for minerals (4).
 - Advances in drilling technologies are expected (2).
 - b. Possible development of technologies for scooping raw materials from surface of seabed (2).
 - c. Prospective excavation-related advances including rock melting and rock shattering with electron beams and nuclear blasting may have large impact (2).
- Improvements in energy extraction and distribution, and search for new sources of energy are expected (1).
 - a. Increasing advances in offshore oil exploration may permit greater exploitation of offshore gas and oil resources at greater depths (4, 5).
 - Improvements in coal mining techniques are expected (1).
 - c. Expected improvements in and development of offshore power plants and floating nuclear power plants (1).
 - d. Improvements in power transmission
 - (1) Improvements may be made in the development of high-voltage electricity transmission (1).
 - (2) Technological advances in regard to power transmission may develop capabilities so that underground (super cold) transmissions will be possible at larger power levels (2).

- (3) Possible expansion of energy extraction for alternative sources from seabed and ocean, including oil and gas, coal, thermal gradient energy, solar energy of surface, tidal energy of coastlines, wind energy at surface, and geothermal energy from seabed (2).
- (4) Increasing use of subsea pipelines for the transport of hydrocarbons may be laid in ever increasind depths of water (5).
- 10. Military uses of marine environment.
 - a. Possible change in approach to uses of military technologies for both underwater and surface operations, from idea of sea as a barrier or combat zone, to the idea that the sea as a cover within which to operate military capabilities (3).
 - Expected development of cybernetic weapons systems (2).
 - c. Possible discouraged development of large scale use of submersibles, except for direct military purposes (ICBM launching submarines) (2).
 - d. Possible development of monitoring systems for strategic weapons capability and detection(2).
- 11. Trends in antisocial and terrorist technologies.
 - Increasing development of antisocial technologies (3).
 - b. Technologies for the commission of violations are growing at a rate, such that violators may be equal to or ahead of technologies for detection and apprehensions of the violations (3).
- Ships and shipping, marine engineering, and transportation technology trends.
 - a. General marine engineering trends.

- Technological advances in centralized and automated engine control systems may be installed in large ships (2).
- (2) Technological advances are expected which allow construction of new marine vehicles or marine vehicles for new uses, such as large hovercraft surface effect ships, hydrofoils, tanker submarines, amphibian vehicles (2).
- (3) Extensive use may be made of larger ships (super cargo ships) (4,2,5).
- (4) Significantly higher speeds in water vehicles expected (2).
- (5) Expected advances in navigation systems capability for real time locating data (2).
- Possible advances in transportation technology.
 - (1) Passengers and cargo may be transported across ocean by surface effect ships (hovercraft) and/or hydrofoil Ships (2).
 - (2) Technological advances in cargo handling may result in development of heavy lift helos as a competitive mode of cargo handling (2).
 - (3) Inland waterways may be used as high speed marine highways by commercial hovercraft in large numbers by 2000 (2).
 - (4) Possible development of enclosed docks with water toxic to barnacles (2).
- 13. Possible improvements in communications capabilities (2).
 - a. Increased use may be made of automated navigation systems in ships, including both inertial and sensing systems. Fail-safe devices may be increasingly used (2).

- Development of capabilities for communications of different forms over phone is expected (2).
- c. Possible widespread and economical use of lasers in communications (2).
- d. Micro-miniaturization may lead to efficient and effective communications relay stations (2).
 - e. The development of response information systems may improve CG's ability to respond to hazardous pollution incidence (2, 1).
- Communications capabilities of ships and aircraft may improve significantly.
 - (1) Possible development of earth orbiting satellite communications relay stations for microwave communications between surface, airborne, and some subsurface vehicles and stations may improve communications (2).
 - (2) The development of new techniques for modulating electromagnetic radiation may improve communications (2)
 - (3) Developments in computer-based integrated tactical data systems may improve communications among units operating in same sea area (2).
 - (4) Greater use of massive underground extremely low frequency radio transmitters may permit worldwide coverage of even submerged units (2).
- 14. Surveillance/monitoring (3).
 - a. SEASAT satellite may be applied to economic zone surveillance activities (4).
 - b. Possible trends in surveillance and monitoring
 (2).

- (1) Possible development of collision avoidance systems.
- (2) Applications of surveillance and monitoring technologies may be used to oversee marine activitiespollution (2).
- (3) Expected increased need to detect and inspect hazardous cargoes (2, 3).
- (4) Expected growing need for the inspection and surveillance of containers for dangerous cargo or illegal contraband (2).
- 15. Trends in the control of waste disposal include technological alternatives to the disposal of municipal sludge and industrial residues (3).
- Increasing technology developments to control pollution are expected (2).
 - a. Possible development of new technologies for the recovery of pollutants from sea surface and below sea surface (2).
 - b. Possible development of new techniques for neutralizing the effect of pollutants on the sea surface and below sea surface (2).
 - c. Possible development of new technologies for transferring or dissipating heat pollution from nuclear power plants to the open ocean will be developed (2).

KEY TO SOURCES

- Commandant Instruction 5000.2B, July 18, 1977, Commandant's Long-Range View.
- (2) "Emerging Environments, Roles, and Activities of the U. S. Coast Guard to 2000 AD", Charles Williams, Inc.
- (3) Charles Williams Law Enforcement Study, 1978.
- (4) "An Analysis of the Relevant Factors and Forecast of Events Affecting U. S. Offshore Management and Security in the 200-Mile Zone", M. J. Cetron, Forecasting International, Ltd.
- (5) Phase I Draft Report on USCG Contract DOT-CG-60320-A including Appendices.

APPENDIX B

EVENT IMPACTS ON PROGRAM ACTIVITIES

KEY TO COLUMN HEADINGS

NO. Unique identification number.

EVNT Event number (See Tables 5-3 and 5-4).

SN Scene (See Table 5-4).

RANK Relative importance of the event to the Coast Guard

(See Tables 5-3 and 5-4).

WT.A Weight of the event normalized to 1000 (See Tables

5-3 and 5-4).

PROG Coast Guard Operating Program abbreviation

(See Table 3-1).

WT. Program weight normalized to 1000 (See Table 6-3).

PA Program Activity code (See Table 3-3).

PA SCR Program Activity score. Estimated impact of the event

on the Program Activity:

Major (8)

Moderate (4)

Minor (2)

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M.	88	117	25	107	88	88		29		123	88	0 0	3	88				0	0	0	0	107	10	-	2	29	5	123	4 6	4 -	i ru	59	107		107	
PROG	ZZ	CVS	MEP	PSS	AN	Z	CNS	MEP	PSS	SAR	A.	2 2	AN	AN	MOMP	MOMP	PSS	PSS	PSS	PSS	PSS	2 2	SAR	ELT	SAR	MEP	MEP	SAR	SAR	E L	MEP	MEP	PSS	RBS	PSS	6.
WT.A	16	16	16	16	22	22	22	22	22	9	200	2 5	30	30	30	30	9	3	30	9	2 20	2 2	8 8	-12	-12	œ	20 0	000	0 0	0 4	14	14	14	14	16	70
RANK	33	3	31	3	12	12	121	121	121	29	4	7	4	4	4	4	4	4	4	4	4	Ŧ ₹	4	09	09	28	8	2 2	0 4	8 5	42	42	42	42	34	2
S	77	7	7	7	=	7	=	7	7		7	7 ~	7	3	3	3	=	3	3	<u></u>	7	7 ~	7 7	=	7	3	7	7 0	7 6	7 5	7	7	7	7	<u> </u>	2
O. EVNT	100011000	30	0	200	019	710	80	160	10 0002	00 11	0171	O O I A I	5100		17 0004	018 0004	06	201	21 00	22	23100	25 0004	26 00	27 00	28	29 00	30100	13000175	2210	34100	35/0		3710	38 0007	39 0008	
21	00	, 0	ŏ	0	0	0	0	9	0	0	0	, 0	0	0	0	9	0	9	9	0	0 0	00	0	0	0	0	0	0	0	0	0	0	0	0	00	,

SCR	4	4	4	4	7	7	7	7	7	4	4	4	4	00	00	7	4	4	4	4	4	4	4	4	4	7	7	7	7	7	4	7	4	2	7	8	2	2	00	4
1		91				17	19	106	91	7	7	3	4	2	53	75	196	17	78	19	80	90	91	40		196			106		7	7	3	2	101	30	40	41	61	17
M.		123	59			0	100		123	88	88	88				0	0	0	107	0	107	123	123	29		107			123	123	88	88	88	88	16	110	29	29	53	107
PROG	SAR	SAR	MEP	MEP	PSS	PSS	PSS	SAR	SAR	AN	AN	A	A	MOM	MOMIP	PSS	PSS	PSS	PSS	PSS	PSS	SAR	SAR	MEP	MEP	PSS	PSS	PSS	SAR	SAR	AN	AN	AN	AN	BA	10	MEP	MEP	MSA	PSS
WT.A	31	3	14	14	14	14	14	14	14	31	31	31	8	3	311	37	31	31	31	31	31	3	31	23	23	23	23	23	23	23	17	17	17	17	17	17	17	17	17	17
RANK	7	7	42	42	42	42	42	42	42	7	7	7	7	=	1	7	7	1	1	7	7	7	7	101	101	101	10	101	101	101	30	30	30	301	30	30	30	30	30	30
3	3	3	7	7	7	7	=	7	7	2	7	7	7	7	2	7	7	2	7	7	7	7	7	2	7	7	7	7	7	7	7	7	7	=	7	7	=	7	7	=
EVNT	0023	0023	0024	0024	0	0024	0024	0024	0	0025	0025	0025	0	00251	0025		0025	0025	0025	0025	0025	0025	0	0026	0026	0026	0026	0026	0026	0026	0027	0027	0027	0027	0027	0027	0027	0027	0027	0027
Š.	N		2	N	N	N		N	129		131	132	133		m	m	3	3		4	4	142	4	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158		160

SCR	4	4	2	~	7	7	2	4	7	*	7	00	00	7	00	4	4	4	4	4	7	7	00	4	4	4	7	7	4	4	4	4	4	7	00	7	4	4	4	4
A	151	40	42	17	180	40		129	13	40	177	179	80	13	22	40	177	180	=	3	40	179	1921	20	21				=	17	3	4	1 2	150	51	175	196	177		180
W.F.	117	29	29	107	107	29	107	107	117	29		107			1		107		88	88		107		113	113	29	123	123	88	88	38	88		191	191	1107	107	107	1107	107
PROG	CVS	MEP	MEP	PSS	PSS	MEP	PSS	PSS	CVS	MEP	PSS	PSS	PSS	SS	ELT	MEP	PSS	PSS	AN	AN	MEP	PSS	SAR	ELT	ELT	MEP	SAR	SAR	AN	AN	AN	AN	AN	MOMP	MOMP	PSS	PSS	PSS	PSS	PSS
WT.A		181	18	18	18	181	18	18	18	18	18	24	24	22	22	22	22	22	211	77	21	77	18		18	18	18	18	31	31	31	31	3	31	31	31	31	31	31	31
RANK	22	22	22	22	22	22	22	22	28	281	28	8	80	13	13	13	13	13	171	171	171	171	28	22	22	22	22	22	7	7	7	7	7	7	7	1	1	H	7	7
3;	7	7	7	=	7	3	3	3	7	7	21	=	7	7	7	7	=	=	F	7	7	7	=	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
EVNT	10	0015	10			0016	00161	0016		10017			6	6	0		6100	0	0	0	0	0020	0		0	0	0322	0		0023				0			0023		0	0023
8	1081	1082	1083	084	1085	980	1087	1 088	680	060				8	92	960	1097	1 098	660			102		104	105	106		108	109	110	111	112	113	114	115	116	117	118	119	120

E 23	-5	7	7	7	7	7	7	80	8	4	80	7	7	7	7	80	4	8	80	7	7	7	4	*	4	*	7	7	7	7	7	4	4	4	4	2	2	2	7	2
4	421	751	7	3	2	211	40	40	41	17	781	191	=	3	5	40	751	上	80	=	3	5	13	14	151	40	42	11	801	7	3	13	14	15	40	42	177	801	3	2
	59	107	88	88	88	113	59	59	29	107	107	107	88	88	88	59	107	107	107	88	88	88	117	117	117	29	29	107	107	88	88	117	117	117	25	29	107	107	88	88
PROG	MEP	PSS	AN	A	AN	ELT	MEP	MEP	MEP	PSS	PSS	PSS	AN	AN	AN	MEP	PSS	SSA	PSS	AN	M	AN	S	SAS	SS	MEP	MEP	PSS	PSS	Z	AN	SS	S	SS	MEP	MEP	PSS	PSS	AN	Z.
M.T.	7	1	22	22	22	22	22	161	16	16	161	16	22	22	22	22	22	22	22	16	16	16	161	16	16	16	16	16	16	22	22	22	22	22	22	22	22	22	15	15
RANK	28	28	131	131	131	13	131	311	31	31	31	31	131	131	13	131	13	131	13	311	31	3	3	311	31	31	31	31	31	13	13	13	13	13	13	13	13	13	38	38
3:	7	2	7	7	7	7	7	7	7	=	7	7	3	3	3	3	3	31	3	7	7	7	7	7	7	21	7	7	7	7	7	21	7	7	2	7	21	7	4	4
EVAL	0034	0	0035	00351	00351	0035	0035	00361	0036	00361	00361	00361	00371	00371	00371	00371	0037	0037		0	0038	0	0038	0038	0038	0038	0338	0038		0039	0039	00391	0039	0039	0039	0039	0039	0039		0040
9	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241

SCR	7	7	7	4	7	4	7	8	4	7	7	7	7	7	7	7	4	7	7	7	7	4	4	7	7	7	7	4	4	4	4	80	7	7	7	4	7	7	7	7-
A!	79	106	91	=	7	3	101	30	工	19	101	30	40	4	751	7	19	8	91	40	751	7	78	92	7	3	2	20	21	40	22	761	7	3	in	40	17	80	40	4
7	107	1123	123	188	188	88	161	1110	101	1107	16	1110	1 59	1 59	1101	1107	1107	123	123	25	107	107	107	123	88	88	88	113	1113	1 59	113	1107	88	188	188	- 55	107	1107	8	7
PROG	888	SAR	SAR	AN	AN	M	BA	01	PSS	PSS	8	2	MED	MEP	PSS	PSS	PSS	SAR	SAR	AEP.	PSS	28	PSS	SAR	N.	N	AN	ELT	ELT	MEP	ELT	PSS	AN	AN	AN	MED	PSS	PSS	WED	MEP
WT.A	17	171	171	13	13	13	13	13	13	13	15	15	15	15	15	15	15	15	15	22	23	8	23	2	18	18	18	18	18	18	14	14	15	15	15	15	15	15	-	7
RANK	30	30	30	47	47	47	47	47	47	47	35	35	35	35	35	35	351	35	35	2	2	5	2	2	22	22	22	72	22	22	42	42	35	35	35	35	35	35	80	2
3:	F	1	7	7	7	7	2	7	2	2	3	3	3	3	3	3	3	3	3	7	7	7	7	7	7	2	7	7	7	7	7	7	7	7	7	7	7	7	77	7
NO. EVNT	61 0027	62 0027	63 0027	64100281	18200159	66 0028	67 00281	68 0028	69 0028	70100281	1100291	72 0029	73 0029	74 0029	15100291	76 0029	177 0029	78 0029	5	180 0030	181 0030	182 0030	183 00301	184 0030	210	186 0031	182 0331	188 0031	189 0031	100 0031	191 0032	192 0032	193 0033	194 0033	195 0033	196 0033	197 0033	198 0033		200100341

E 2	•	•	00	•	7	7	7	4	4	7	4	4	4	7	*	00	7	7	7	7	00	00	*	4	4	4	4	4	4	4	7	+	00	00	00	4	4	*	4	4
M	42	751	30	611	62	63	64	65	199	89	90	91	92	75	171	79	40	17	78	92	14	15	40	41	42	17	78	19	7	3	4	5	13	14	15	40	75	17	18	79
7	95	107	110	82	1 29	82	2	58	82	82	123	123	123	107	1001	107	59	1001	1107	123	117	117	29	58	59	100	1107	1007	88	88	88	88	117	117	1117	25	1107	1107	1007	101
PROG	034	PSS	01	MSA	MSA	MSA	NS.	NS.	MSA	AS.	SAR	SAR	SAR	PSS	888	PSS	MEP	PSS	SSA	SAR	SS	CVS	MEP	MEP	MED	882	PSS	PSS	AN	A	AN	N	SS	CVS	CNS	MEP	PSS	PSS	PSS	PSS
WT.A	7	7	20	20	20	20	201	20	20	20	20	20	20	15	15	15	23	23	23	23	11	11	15	15	15	15	15	15	11	11	7	11	11	11	11	11	11	11	11	11
RANK	57	57	19	19	19	19	191	19	19	19	191	19	19	35	35	35	101	101	101	101	51	52	38	38	38	38	38	38	49	49	49	49	49	49	49	49	49	49	49	49
3	3	3	2	7	2	2	2	7	2	2	2	7	2	7	2	2	3	3	3	3	=	7	7	7	2	2	7	7	7	7	7	2	7	7	7	7	7	7	2	7
NO. EVINT	282 0047	3	284 0048	285 0048	286100481	-	288 0048	-	000	007	-	_	00	004	296100491	00	298 0050	299 0050	=	_	302 0051	303 0051	304 0052	305 0052	306 0052	307 0052	308 0052	309 0052	310 0053	311 0053	312 0053	313 0053	314 0053	315 0053	316 0053	317 0053	318 0053	319 0053	320 0053	321 0053

SC P	00	00	7	4	4	4	4	4	4	4	4	4	4	4	00	80	00	00	2	4	4	4	4	4	4	7	7	7	00	7	00	4	4	7	7	7	7	7	4	4
- E	40	42	180	201	211	140	42	23	42	=	17	3	4	2	50	511	52	53	1751	176	177	181	180	106	161	1 2	177	1801	192	22	187	106	16	1	12	3	2	1771	40	41
*	59	59	100	113	113	29	59	113	59	88	88	88	88	88	191	191	191	191	1107	100	100	100	1107	123	123	113	100	100	1123	113	47	123	123	88	88	88	88	1107	29	25
PROG	MED	MEP	250	ELT	ELT	MEP	MED	ELT	MEP	AN	AN	AN	Z.	AN	MOMP	MOMP	MOMP	MOMP	PSS	PSS	PSS	28	PSS	SAR	SAR	ELT	PSS	PSS	SAR	ELT	RBS	SAR	SAR	AN	AN	AN	AN	PSS	MEP	WED
WT.A	151	15	15	111	111	111	111	14	14	58	58	29	58	29	58	58	29	58	53	58	82	23	2	2	29	121	12	121	121	25	25	25	25	111	111	111	111	111	7	7
RANK	88	38	88	491	49	49	49	45	45	5	5	15	2	2	5	5	5	15	5	5	5	2	2	2	5	48	48	48	48	7	71	71	71	51	51	511	21	21	571	57
-3:	4	4	4	2	7	2	7	2	2	7	7	7	7	7	7	7	7	2	2	7	7	7	7	7	7	7	7	7	7	3	3	3	3	3	3	3	3	31	3	m
EVAT	109001	103401	109001	0341	0341	10041	10041	10042	100421	0043	100431	103431	0043	0043	0043	10043	103431	10043	100431	0043	10043	10043	10043	0043	10043	10044	10044	10044	10044	10045	10045	10045	0045	100461	10346	103461	100461	100461	100471	10047
8	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	566	267	268	569	270	27	272	273	274	275	276	277	278	279	280	281

441	7	7	7	7	7	8	7	7	7	4	7	4
100	=	=	=	=	_	=	=	=		=	15	=
_A:	11	-	-					=	=	49	5.50	111
3	100	100	59	59	1107	100	8	88	88	- 56	1107	100
PROG	PSS	PSS	MEP	MEP	PSS	PSS	Z	A	AN	MEP	PSS	PSS
A.T.	101	101	151	151	151	151	201	20	201	20	201	20
RANK	53	531	38	38	38	38	19	19	191	191	19	19
- Z	7	7	7	4	4	4	7	7	7	2	21	7
EVNT	0058	0058	0029	8	16500	16500	10900	10900	10900	10900	10900	10900
9	362	363	364	365	366		368	369	370	371	372	373

PA SCR	4	7	7	4	4	4	4	7	7	7	7	7	7	7	7	7	7	7	7	4	4	4	4	4	4	4	4	4	4	7	7	7	7	7	4	4	4	7	7	7
A:	80	=	3	13	14	151	40	42	111	19	80	22	761	17	19	7	3	4	5	13	141	15	40	42	751	111	781	19	80	7	3	40	191	3	13	14	15	40	42	75
5	101	88	88	117	117	1117	59	59	1107	1001	101	113	107	1001	107	88	88	88	88	117	117	111	25	59	107	100	107	107	101	88	88	25	107	88	117	117	117	59	29	107
PROG	PSS	M	M	SNS	SS	CSS	MEP	MEP	PSS	PSS	PSS	ELT	PSS	PSS	PSS	Z.	AN	N	AN	SS	SAS	SAS	MEP	MEP	PSS	PSS	PSS	PSS	PSS	AN	AN	MEP	PSS	M	SAS	SSS	CVS	MEP	MED	PSS
W.A	=	24	24	24	24	24	24	24	24	24	24	6	6	6	6	151	151	_	151	15	151	15	15	151	151	15	151	15	15	6	6	6	6	101	101	101	101	101	101	10
RANK	49	6	6	6	6	6	6	6	6	6	6	55	55	55	55	38	38	38	38	38	38	38	38	38	38	38	38	38	38	72	2	72	7	53	53	53	53	53	53	53
3:	7	7	7	7	7	7	7	2	7	7	7	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	7	1	7	7	7	7	1
EVAT	0053	9054	0054	0054	1000	0054	0054	0054	0054	0054	0054	0055	0055	0055	0055	9500	9500	9500	9500	19500	19500	19500	19500	19500	19500	19500	19500	9500	19500	0057	0057	0057	0057	0058	0058	0058	0058	0058	0058	0058
0	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	329	360	361

APPENDIX C

CONSENSOR INFORMATION AND INSTRUCTIONS

The CONSENSOR is an electronic device which improves group communication and helps meetings convened for problem-solving and decision-making achieve their goal.

The CONSENSOR is a tool designed to assist the decision-making process. Used properly, the CONSENSOR belongs less in the final phase of decision-making and more in the earlier exploratory, consultative, and deliberative phase in which contributions are sought from a relatively large number of people. The purpose of this phase, and therefore the purpose of the CONSENSOR, is to lead to better-informed decisions.

Increasingly, the complexity and interrelations of today's organizations demand a participatory style of planning and management. The day of the insulated decision-maker is no more. With this era of group deliberation, various techniques to help aggregate individual opinions and ideas into unambiguous expressions of collective judgment have evolved. The CONSENSOR is an important tool to help make these techniques work.

The CONSENSOR is not a substitute for the lively give-and-take, the spirited exchange of opinion, in a successful meeting. It augments the verbal exchanges by helping to bring out and clarify what is apt to be ignored or left unclear in these exchanges. It makes meetings more productive by helping to insure clearer results and a faster pace of deliberation.

The CONSENSOR helps achieve consensus and improve communication in meetings in the following ways:

Aims group toward consensus by

- 1.) Revealing the full range of opinions on an issue.
- 2.) Establishing unambiguously whether a consensus exists on an issue.
- Establishing unambiguously a group's collective preference within a range of options under consideration.
- 4.) Establishing the strength or weight of a group's collective preferences.
- Uncovering elements of consensus within the variety of opinions and attitudes represented by a group.
- 6.) Enabling recording and monitoring of a meeting's progress.

Facilitates discussion and improves communication by

- 1.) Encouraging maximum participation.
- 2.) Sharpening a group's focus on the issue under discussion.
- Minimizing emotional bias and other forms of "noise" which interfere with the clear flow of discussion and information.
- 4.) Helping to remove ambiguities often associated with group deliberation and collective judgment.
- Identifying the existence of misunderstanding or lack of clarification of an issue.

Other important attributes of the CONSENSOR which can make meetings more effective include:

- 1.) Individual opinion can be expressed anonymously.
- 2.) Numerous discussion items can be considered rapidly.
- 3.) Participants in a meeting can express shades of opinion in addition to the normal "yes" and "no".
- 4.) A group profile of demographic and/or attitudinal characteristics can be established quickly, without embarrassment.

We all hold untold creativity and wisdom locked within us. This resource is multiplied in the case of a group, and with group interaction it becomes more accessible. The quantum leaps in thinking which characterize creativity, innovation and inspiration are more easily triggered in the fertile environment of group meetings where a multitude of opinions and ideas can be expressed. Making meaning of these opinions and ideas is the bridge to creative decision-making and problem-solving. The CONSENSOR is a major breakthrough toward building this bridge.

-3-

THE CONSENSOR

THE BASIC SYSTEM

The basic CONSENSOR system consists of seventeen participant's input Terminals, a high resolution CRT Display Monitor, and a Control Console.

TERMINALS

There are sixteen individual input Terminals (Fig. 1) and a Terminal built into the Control Console in the standard CONSENSOR system. A Selection Switch and a Weighting Switch are on each Terminal. Each Terminal also has a voting button and a voting light.

Selection Switch

The Selection Switch permits each participant to express personal opinions by choosing any position within the selection range from "0" through "10" which best represents his or her view on whatever issue is being discussed. These eleven selection positions are assignable in a variety of ways.

Conventional decision-making generally involves a "yes" or "no" answer. By assuming "0" means "no" and "10" means "yes" on the CONSENSOR Selection Switch, the same binary decision system is established. However, with the CONSENSOR, additional flexibility of expression is obtained, for a participant may select from a range of "yes's" (10, 9, 8, 7, 6) and a range of "no's" (0, 1, 2, 3, 4) with selection "5" representing indecision or uncertainty. In addition, the range of numbers around the Selection Switch may be regarded as progressive values, such as percentages or probabilities, rather than mere degrees of yes and no.

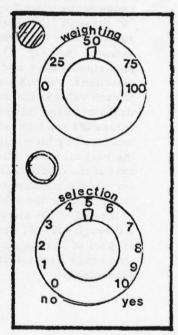


FIG. 1

Weighting Switch

The Weighting Switch on each Terminal serves as an "intensity" function and enables each participant to qualify opinions expressed on the Selection Switch by varying the strength of each individual's input. (More about this later)

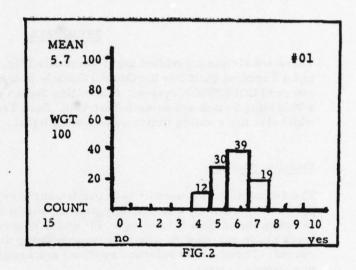
-4-

DISPLAY MONITOR

The Display Monitor is a standard television monitor set. The Display Monitor displays in a quantified form, information collected from a "vote" registered on the input Terminals. The information is shown on a standard television screen.

Display Distribution

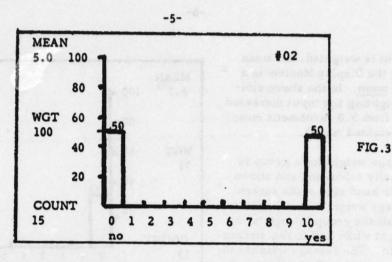
The Display Monitor shows the eleven positions on the selection range of the input Terminals, "0" through "10", across a horizontal axis at the bottom of the screen. (See Fig. 2) When all participants have made their selections, the cumulative input to each value is displayed by vertical light bars (histogram form) across the selection scale and measured by the values along the vertical axis. The vertical axis of the display distribution serves as a measure of the cumulative input to the selections and is labeled in 20% increments from



0 through 100. As the display of selections is always normalized, the sum total of all bars of light in each case will be 100%. For example, Figure 2 shows that opinions range from selection "4" through selection "7" and that they are distributed accordingly:

COLUMN	HEIGHT
#4	12% of the participants
#5	30% of the participants
#6	39% of the participants
#7	19% of the participants
	100%

By way of example, suppose a group of people are discussing an issue for which a full "yes" or a full "no" is requested (no maybes -- "1" through "9"). If half of the people vote "no" and half of them vote "yes" -- that is, if the response is equally divided -- then the light column over the "0" and the "10" selections will both show to the 50% level, as in Fig. 3.



The CONSENSOR automatically calculates the average, or arithmetic mean, response within the range of selections made by the participants. This value is displayed on the left-hand side of the screen. The mean is based upon the number of individual voter Terminals activated at the time the moderator presses the DISPLAY button on the Control Console. As the number of people wishing to participate in each vote changes, the basis for calculating the mean with each iteration is adjusted automatically. The mean is displayed when the moderator presses the MEAN button on the Control Console.

Weighting

Mean

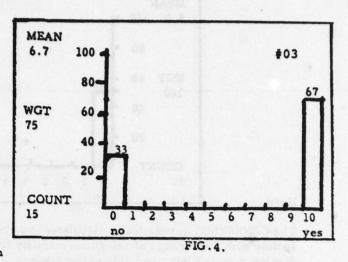
One of the most unusual and valuable features of the CONSENSOR is the Weighting Switch. Each individual voter Terminal has, in addition to the Selection Switch, a dial for adjusting the intensity of one's opinions, depending upon the individual's personal feelings of confidence or competence (or any other relevant criterion) in dealing with the particular subject being discussed. The Weighting Switch has five values -- 0, 25%, 50%, 75%, and 100% (see Fig. 1). If, for example, individual confidence is used as the relevant qualifier, turning the Weighting Switch to 100% indicates that the participant is fully confident in the selection made on the Selection Switch. The system then counts a "full" vote for that selection. Should the participant turn the Weighting Switch to 50% -- indicating half as much confidence in the selection -- that opinion will be registered at half strength (50% of a vote). In short, Weighting qualifies Selection, increasing or decreasing a person's voting power as the individual elects to alter "weight" settings.

Cumulative weighted input to all eleven selections is always displayed, normalized to 100%. For example, in the yes/no situation described before (See Fig.3), if the half of the group saying "10" (yes) were to leave their Weighting Switches at 100%, and the half saying "0" (no) were to reduce their weights to 50%, the "10" bar would then display twice as high as the "0" bar -- 67% at "10", with 33% at"0". (See Fig. 4.) Note that this is something new to our customary practice of democracy. The results are now weighted and the display represents the distribution of total voting power and not simply individual votes. Both columns represent 50% of the voters each, but as the input to both alternatives is unequally weighted, the "yes" half of the group now exerts more influence on the results than do the "no's".

-6-

When input is weighted, the mean shown on the Display Monitor is a weighted mean. In the above situation, weighting the input increased the mean from 5.0 (arithmetic mean) to 6.7 (weighted mean).

The average weight for a group is automatically calcualted and shown on the left-hand side of the screen. The average weight shown in Fig. 4 is 75%: half the group is registering 100% weight while half is registering 50% weight. The average weight can become a very significant figure, depending upon what standard is being used to qualify the votes expressed on the Selection Switch.



Frame Number

Each display is numbered by the CONSENSOR automatically and the individual frame number is shown in the upper right-hand corner of the screen. The system begins the numbering process from the first frame displayed in a meeting and identifies them consecutively until the system is turned off. Numbering begins anew with #01 each time the CONSENSOR is turned on.

Count

The number of individuals participating in any given vote is displayed in the lower left-hand corner of the screen under the word COUNT. This is the number of individual Terminals activated at the moment the DISPLAY button is pressed by the moderator.

Extracted from:

Consensor, Applied Futures, Inc., October 1977. Applied Futures, Inc., Greenwich, CT., pages 1-6.

With permission of:

Applied Futures, Inc. 22 Greenwich Plaza Greenwich, Connecticut 06830

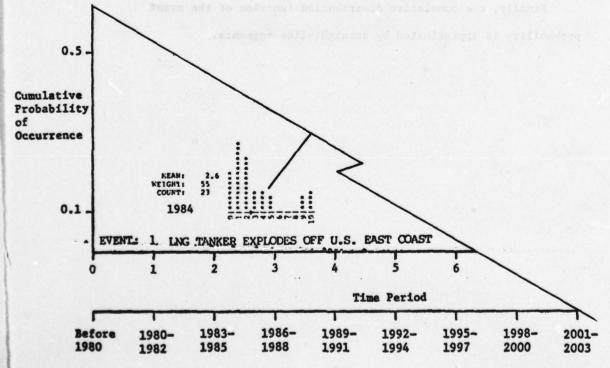
APPENDIX D RESULTS OF THE MODIFIED DELPHI CONFERENCE

A set of 62 future events was presented to the panel at the conference, and by mail to 6 other participants. In the course of the conference 16 event descriptions (Numbers 8, 11, 17, 19, 21, 24, 31, 36, 40, 41, 42, 43, 45, 51, 54, 60) were modified, and 3 events (Numbers 28, 49, 53) were deleted. One additional event (Number 63) was framed at the conference. Mail responses have been combined with conference responses except where event descriptions were altered.

The attached sheets display the final or only votes on the question:

By what year will the probability of occurrence of this event reach (0.1, 0.5, 0.9)?

The display is structured as a graph of cumulative probability versus time period (corresponding to Consensor switch positions) and year. The event number and description appears above the horizontal axis, as may be seen in the following extract:



At each probability (0.1, 0.5, 0.9), a bar chart of responses (weighted by the respondent's confidence in his estimate) is shown. All bar charts are expressed as percent; each * represents 2%. Bar chart indications may not sum to 100 because of rounding errors.

Additional information is given to the left of the bar chart:

Mean: The arithmetic mean of all responses weighted by respondents' confidence

estimates, in time periods.

Weight: The arithmetic mean of respondents'

confidence estimates, in percent; this can be interpreted as a group

confidence measure.

Count: The number of responses.

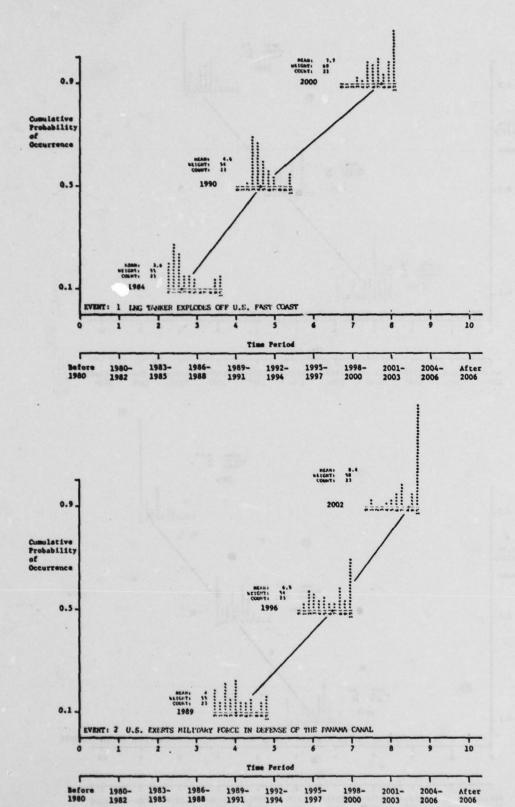
The number in larger type appearing below "Count" is the mean period expressed as a year. The following conversion has been used:

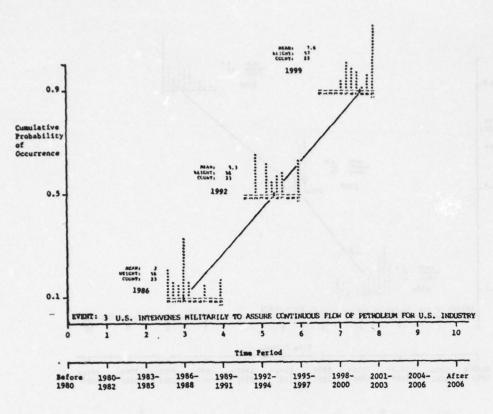
X.0-X.3 Low year of period X

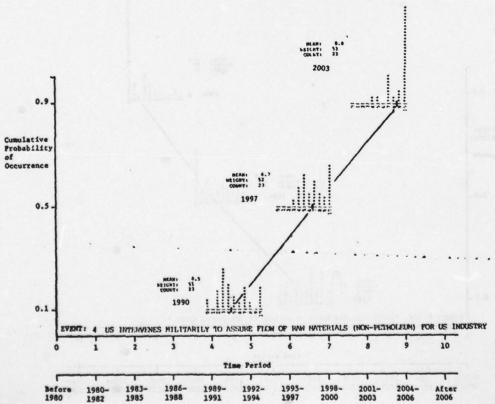
X.4-X.6 Middle year of period X

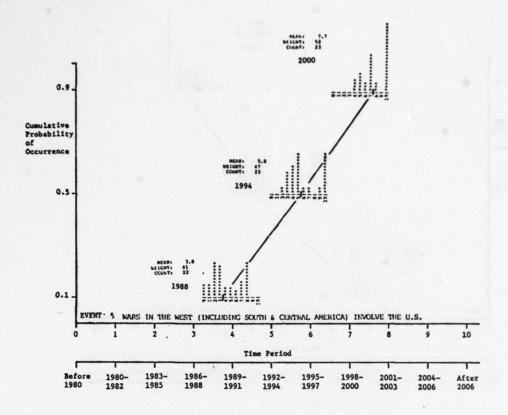
X.7-X.9 High year of period X

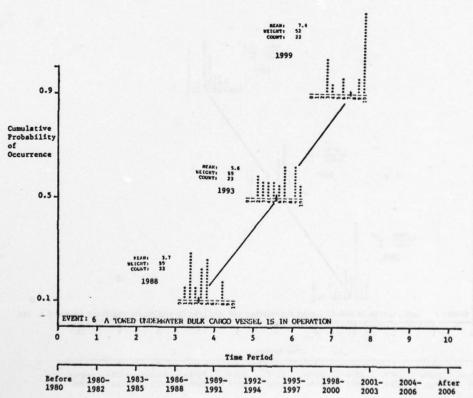
Finally, the cumulative distribution function of the event probability is approximated by straight-line segments.

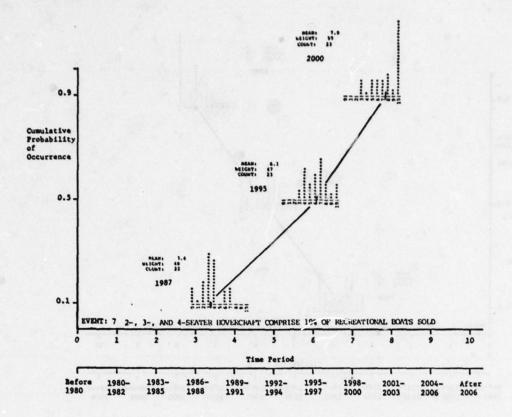


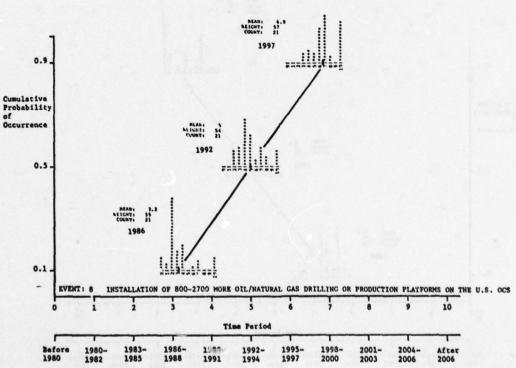


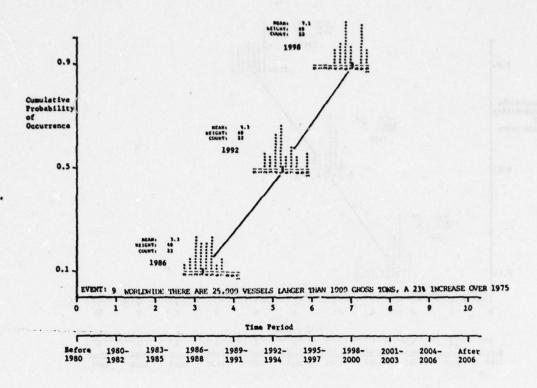


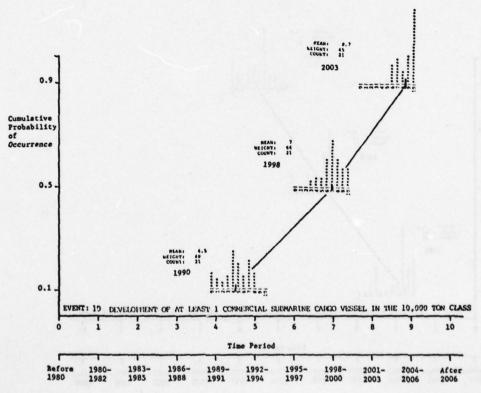


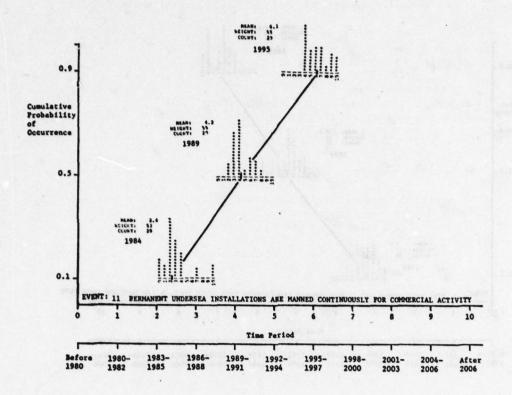


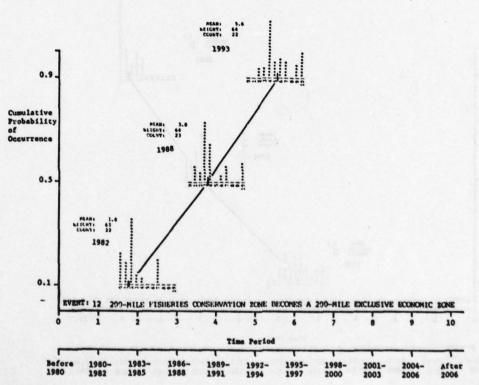


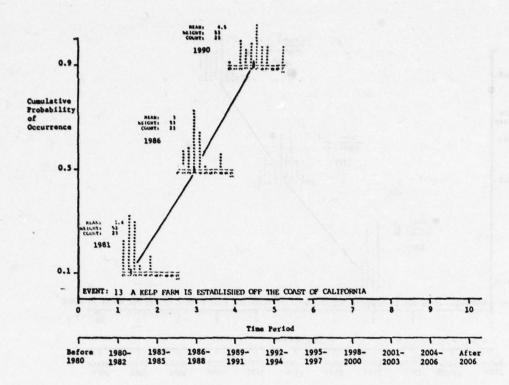


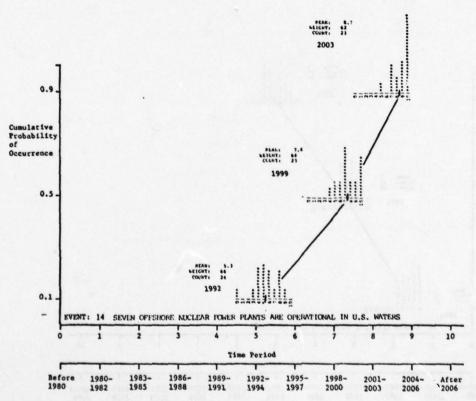


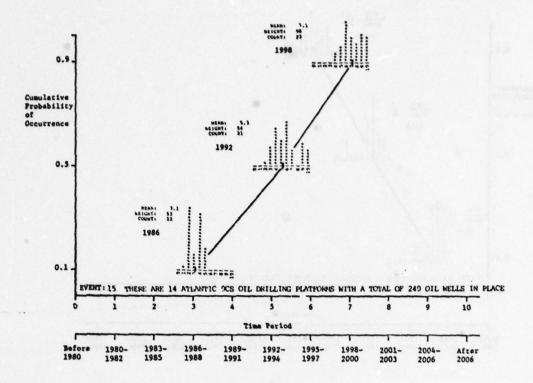


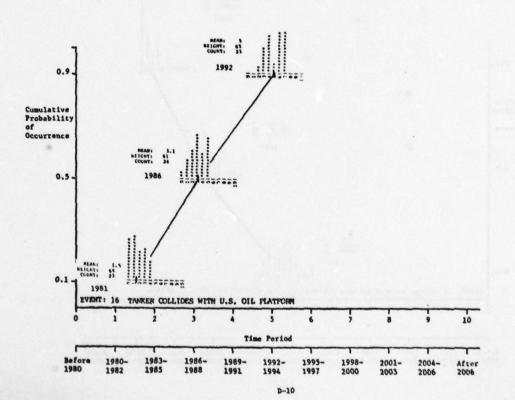


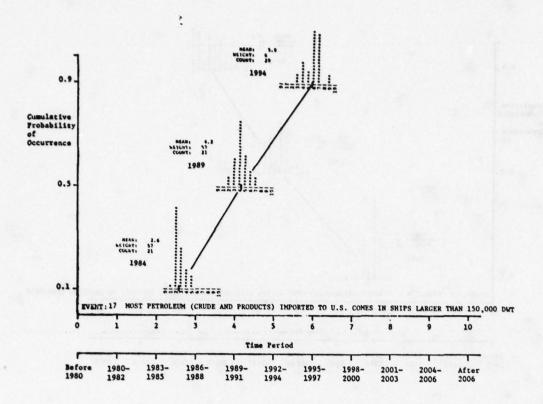


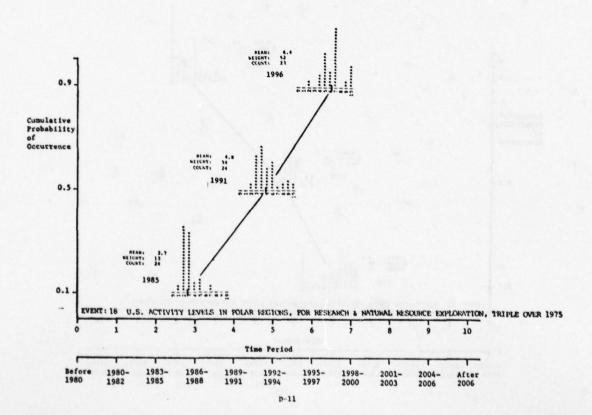


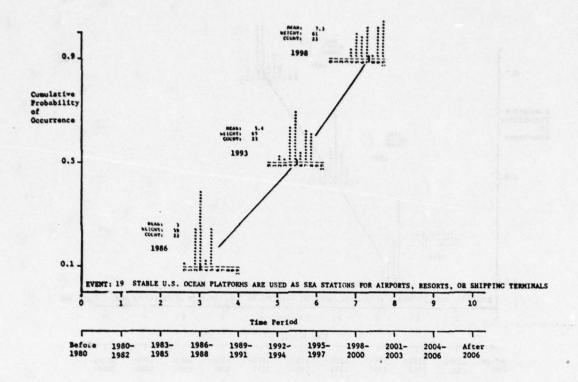


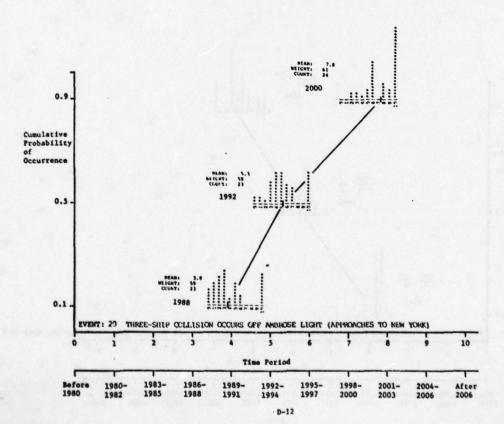


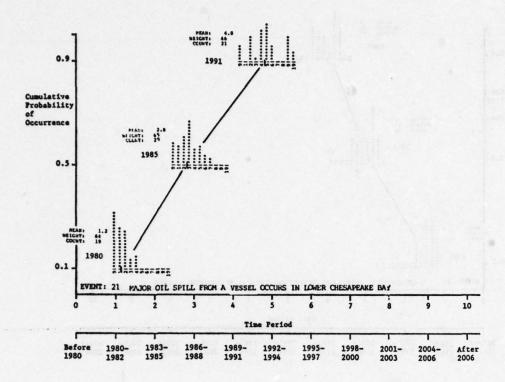


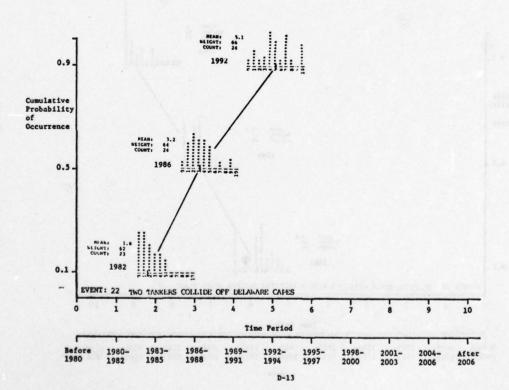


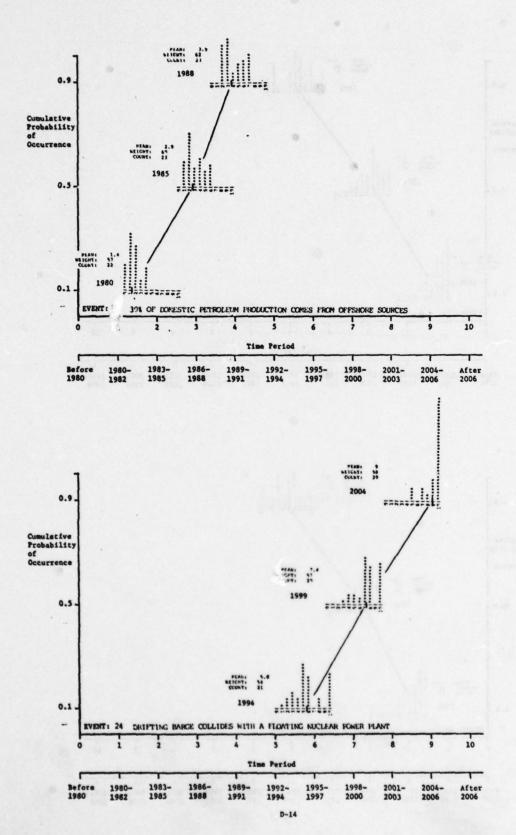


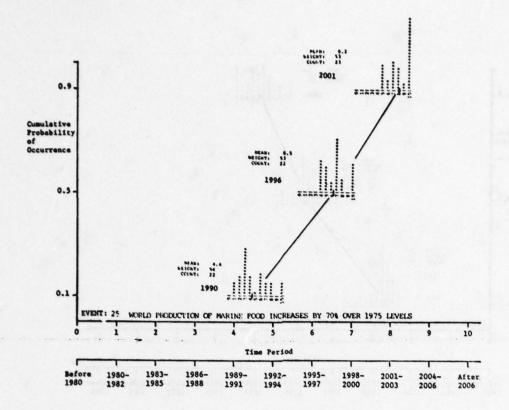


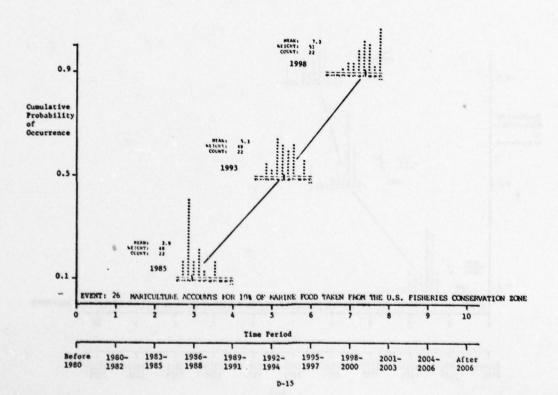


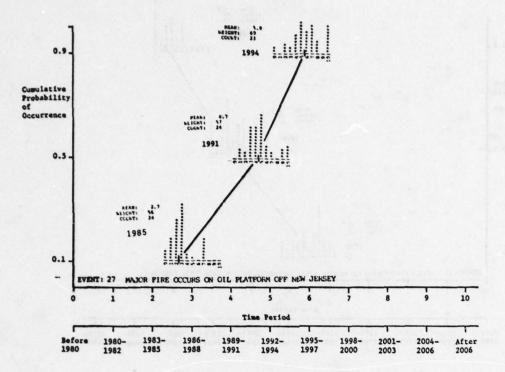


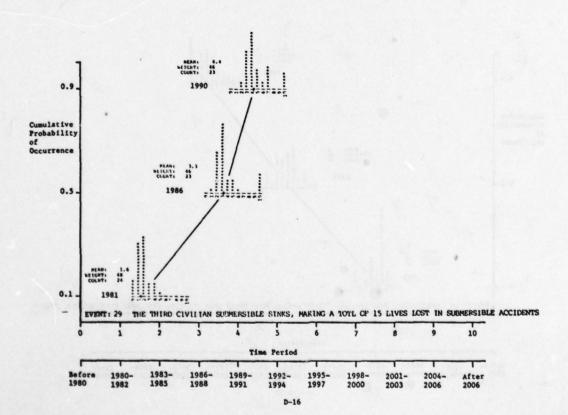


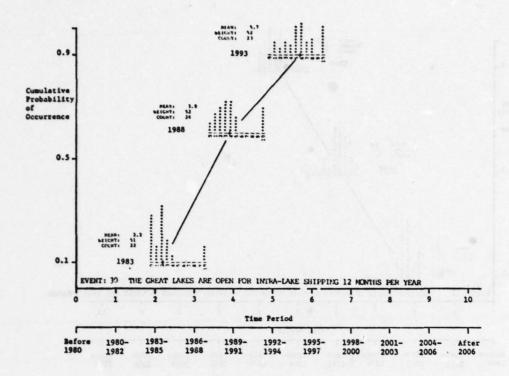


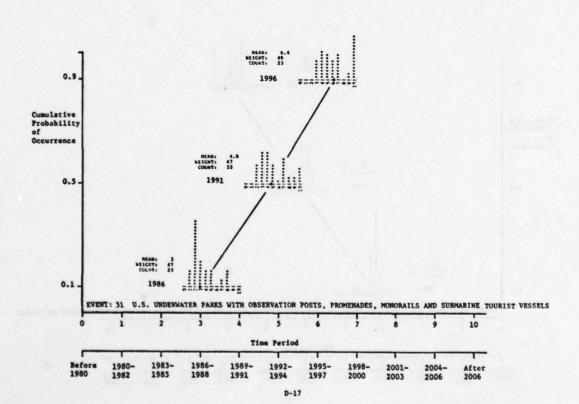


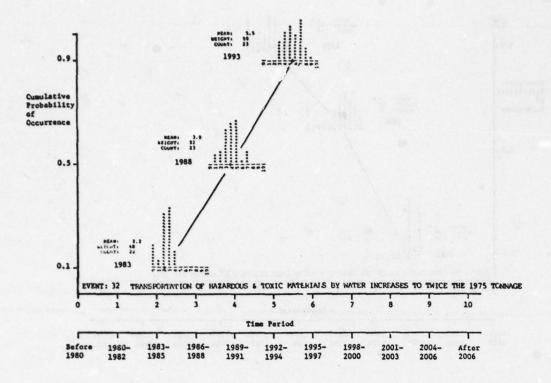


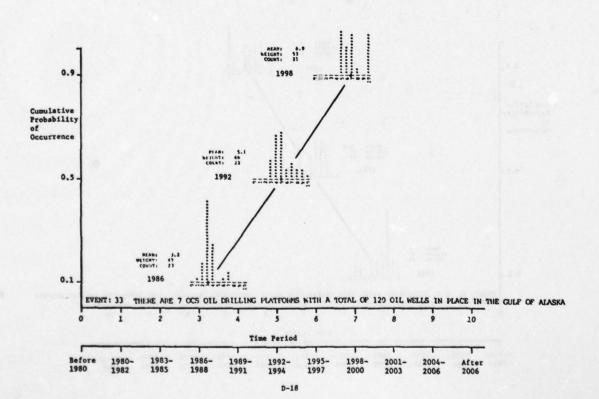


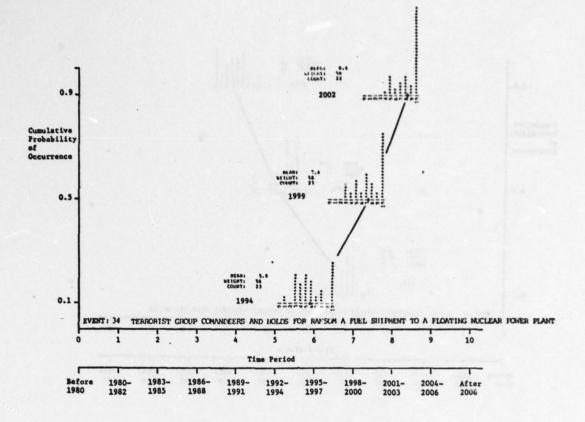


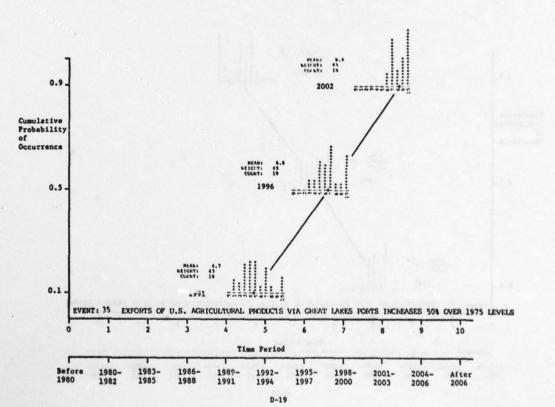


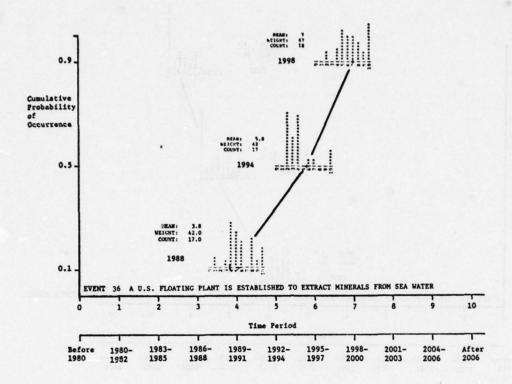


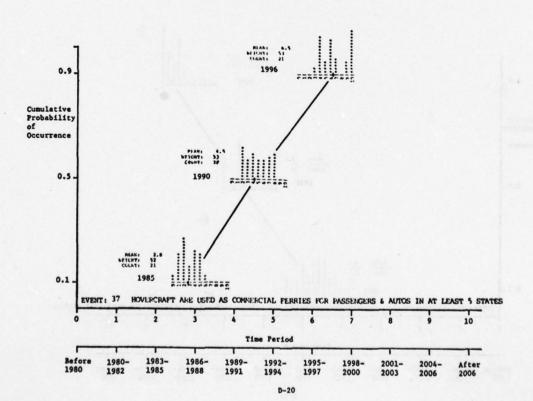


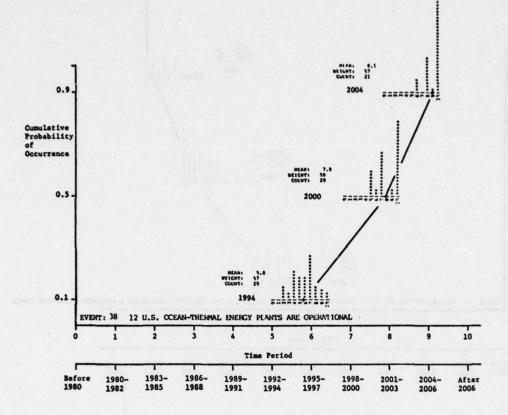


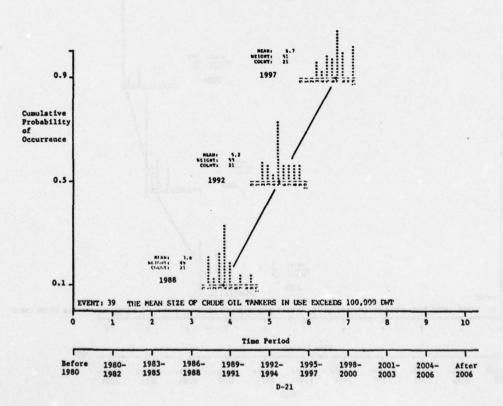


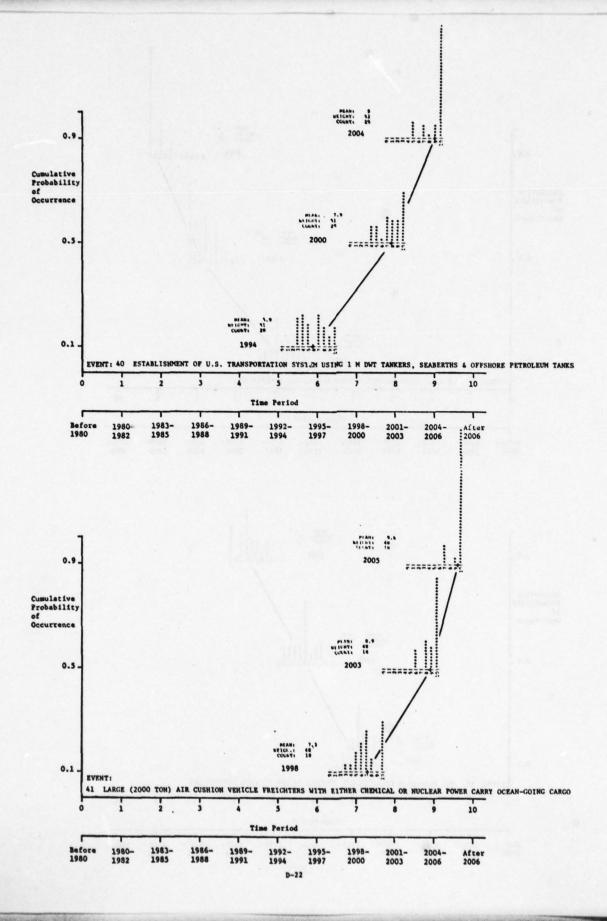


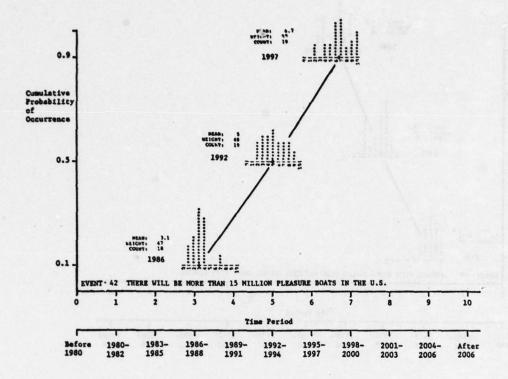


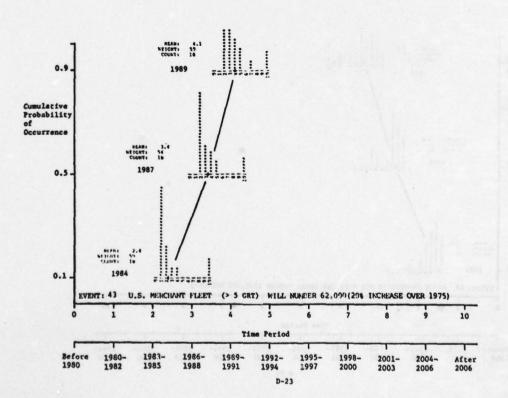


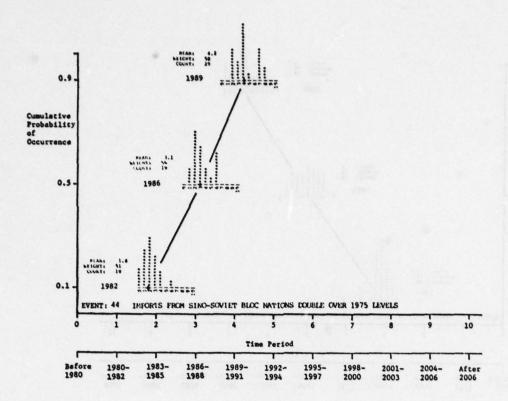


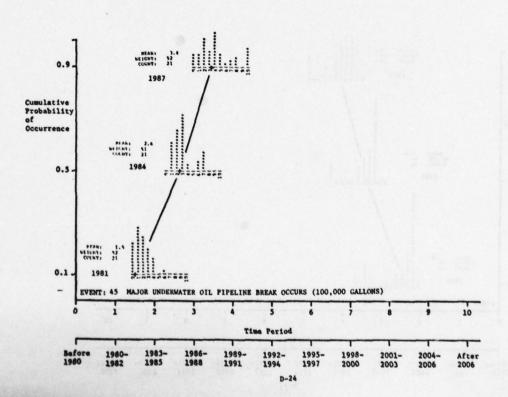


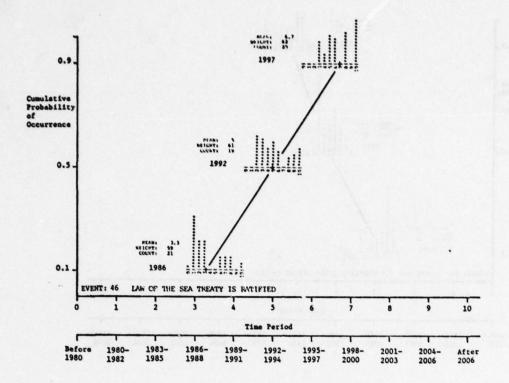


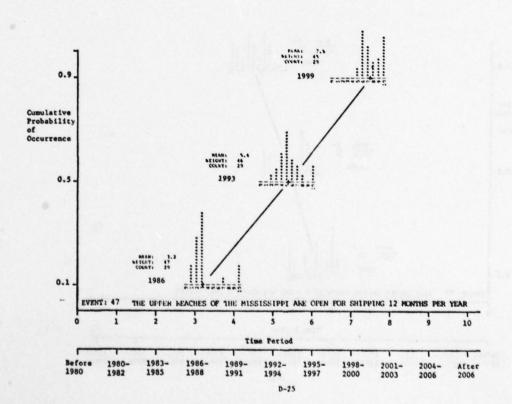


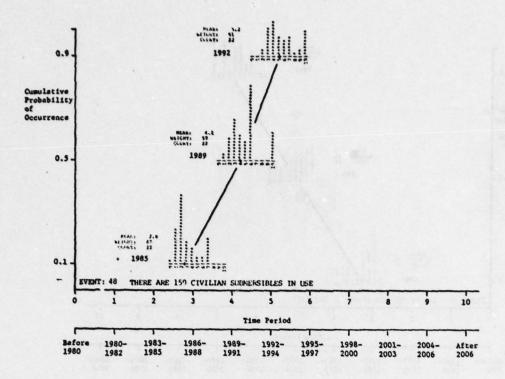


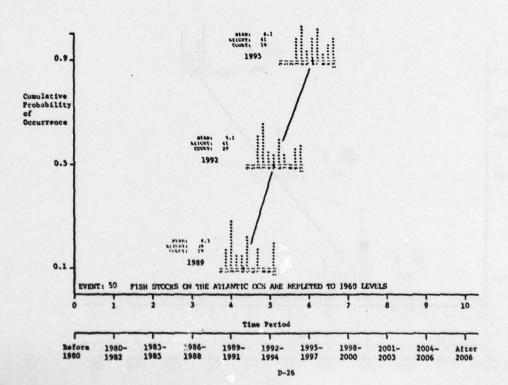


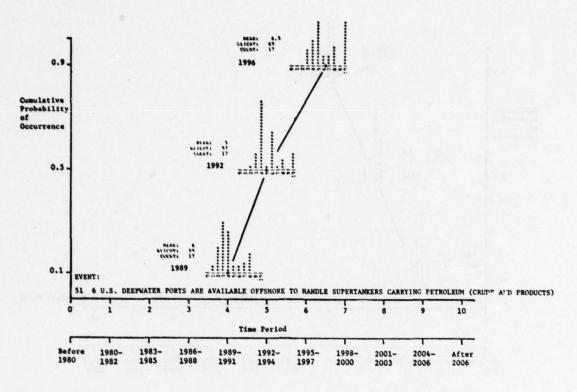


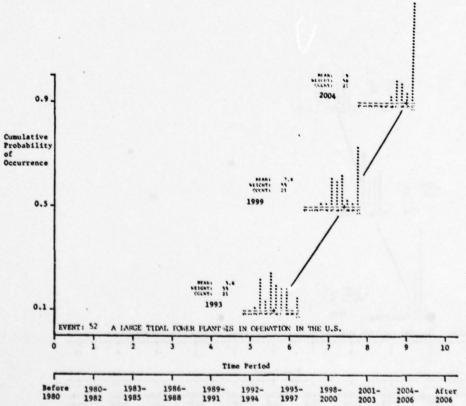




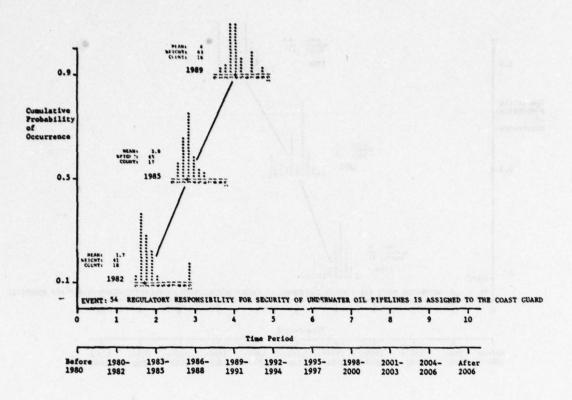


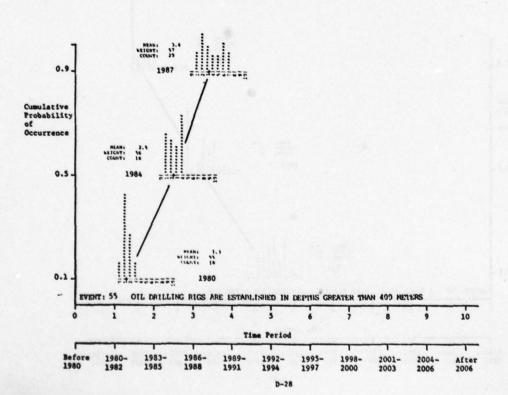


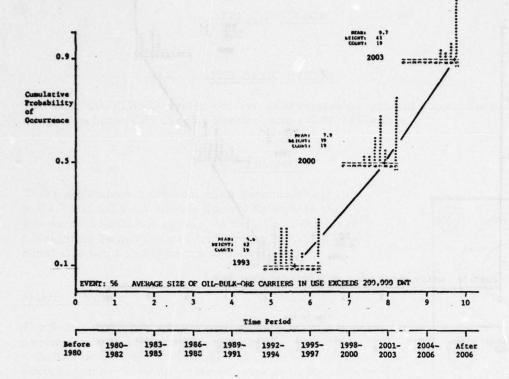


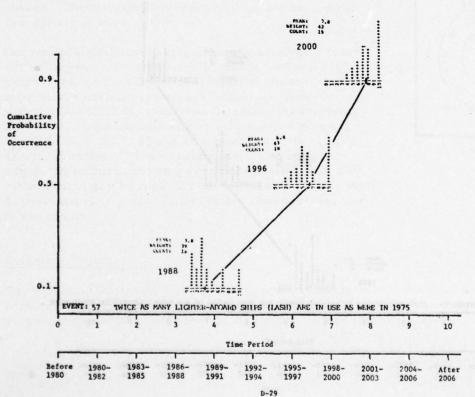


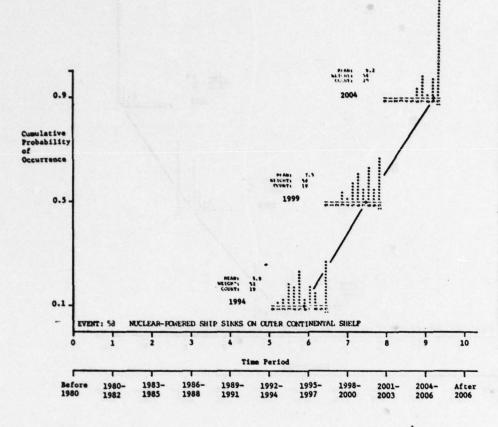
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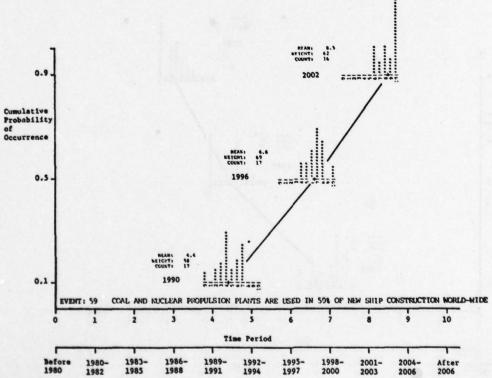




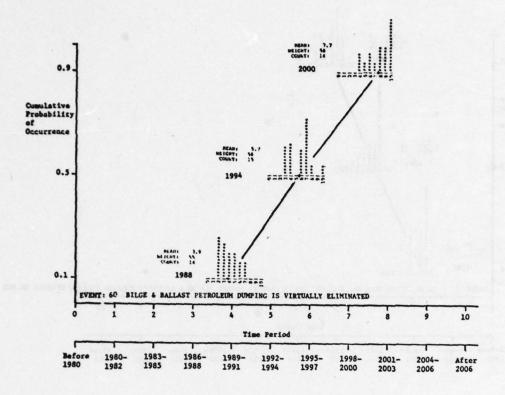


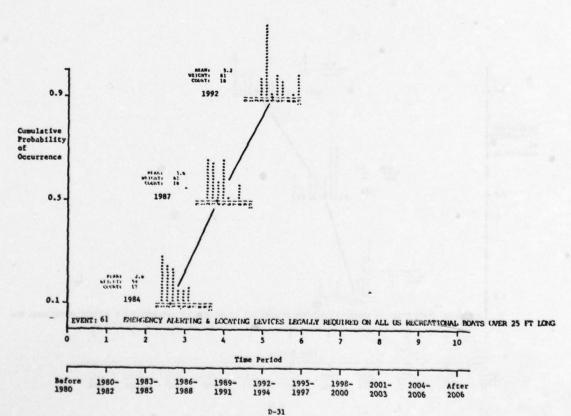


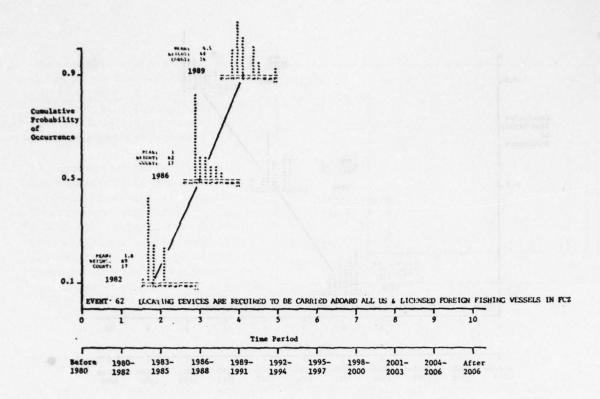


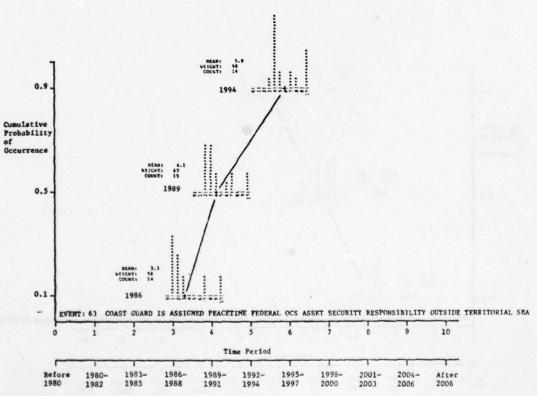


D-30









APPENDIX E

SURVEILLANCE INFORMATION ELEMENT WEIGHTS BY PROGRAM ACTIVITY

KEY TO COLUMN HEADINGS

NO. Unique identification number.

SN Scene: 0 implies a current requirement.

6 implies a future requirement.

PROG Coast Guard Operating Program abbreviation.

PA Program Activity code.

Program Distinct surveillance-related operation.

Activity

Function Surveillance function.

SIE Surveillance Information Element code.

Surveillance Self-explanatory. Information

Information Element

SCR Score. An estimate of the importance of the

Function/SIE to the performance of the

Program Activity:

Major (8)
Moderate (4)
Minor (2)

WT Weight. For each Program Activity, the Function/SIE

score normalized to 1000.

SCR WT. SCR WT. 1250 8 1250 8 1251 4 125 2 62	2211111	812861 812861 411431 21711 21711 411431	8 364 2 91 8 364 4 182	8 500 4 250 2 125 2 125	813081 813381 21 771 813081	4 250 4 250 8 500	41250 41250 81500	8 333 4 167 4 167 8 333
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IDETECT 001 AIRCRAFT, MISSILE LICCATE 023 RANGE AND BEARING OF AIRCRAFT/MISSILE LICCATE 024 AINTIUDE OF AIRCRAFT/MISSILE IDENTIFY 028 CHAKACTER OF AIRCRAFT (FRIEND OR FOE) IDENTIFY 029 17PE OF AIRCRAFT OR MISSILE OBSERVE 037 WOVEMENT OF AIRCRAFT OR MISSILE OBSERVE 046 HOSTILE AIRCRAFT ACTIVITY	DETECT 002 LARGE VESSEL DETECT 003 MEDIUM-SIZED VESSEL DETECT 004 SWALL VESSEL IDCATE 1023 RANGE AND BEARING OF VESSEL IDCATE 1023 RANGE AND BEARING OF VESSEL IDCATIFY 028 VESSEL TAPE OR CLASS OBSERVE 037 VESSEL MOVEMENT OBSERVE 046 HOSTILE VESSEL ACTIVITY	DETECT 010 LARGE SUBMERGED SUBMARINE LIOCATE 023 RANGE AND BEARING OF SUBMARINE LOCATE 024 DEPTH OF SUBMARINE IDENTIFY 028 SUBMARINE CHARACTER (FRIEND OR FOE) IDENTIFY 029 SUBMARINE TYPE OR CLASS OBSERVE 037 SUBMARINE MOVEMENT OBSERVE 046 HOSTILE SUBMARINE ACTIVITY	DETECT 0.34 LAND TARGET OR AIMING POINT 1.024 LAND TARGET OR AIMING POINT 1.024 ALTITUDE OF TARGET/AIMING POINT 1.020 1.024 ALTITUDE OF TARGET/AIMING POINT 1.025 GEOGRAPHICAL FOSITION OF TARGET/AIMING POINT 1.029 TARGET TYPE 1.025 TARGET TYPE 1.035 FALL OF SHOT 1.08SERVE 0.35 FALL OF SHOT 1.08SERVE 0.37 TARGET MOVEMENT 1.08SERVE 0.46 HOSTILE ACTIVITY OF TARGET
10931 01 MOMP! SOI AAN SURVETLIJANCE 10941 01 MOMP! SOI AAM SURVETLIJANCE 10951 01 MOMP! SOI AAM SURVETLIJANCE 10961 01 MOMP! SOI AAM SURVETLIJANCE 10971 01 MOMP! SOI AAM SURVETLIJANCE 10981 01 MOMP! SOI AAM SURVETLIJANCE 10991 01 MOMP! SOI AAM SURVETLIJANCE	100 0 MOMP 51 ASUM SURVETLIANCE 101 0 MOMP 51 ASUM SURVETLIANCE 102 0 MOMP 51 ASUM SURVETLIANCE 103 0 MOMP 51 ASUM SURVETLIANCE 104 0 MOMP 51 ASUM SURVETLIANCE 106 0 MOMP 51 ASUM SURVETLIANCE 106 0 MOMP 51 ASUM SURVETLIANCE 107 0 0 0 0 0 0 0 0 0 0 0 0 0	108 0 MOMP 52 ASM SURVETLIZANCE 109 0 MOMP 52 ASM SURVETLIZANCE 110 0 MOMP 52 ASM SURVETLIZANCE 111 0 MOMP 52 ASM SURVETLIZANCE 112 0 MOMP 52 ASM SURVETLIZANCE 113 0 MOMP 52 ASM SURVETLIZANCE 114 0 MOMP 52 ASM SURVETLIZANCE	115 0 MOMP 53 MGFS SURVEILLANCE 116 0 MOMP 53 MGFS SURVEILLANCE 117 0 MOMP 53 MGFS SURVEILLANCE 117 0 MOMP 53 MGFS SURVEILLANCE 118 0 MOMP 53 MGFS SURVEILLANCE 1120 0 MOMP 53 MGFS SURVEILLANCE 122 0 MOMP 53 MGFS SURVEILLANCE 123 MGFS
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FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT DETECT 012 FLOODED TERBAIN DETECT 014 GASEDUS CHEMICAL AGENT DETECT 017 HAAT FROM FIRES AND EXPLOSIONS DETECT 018 GASEDUS CHEMICAL AGENT DETECT 019 HAAT FROM FIRES AND EXPLOSIONS DETECT 019 HAAT FROM FIRES AND EXPLOSION FOR AGENT 019 HAAT ARD ACT AND ALLOUT, GAS CLOUD MOVEBERT OBSERVE 056 SIZE OF NUCLEAR BUHST, EXPLOSION, FTC, ORSERVE 056 WIND VELOCITY OBSERVE 056 NATURE OF DISTRESS: PIRE OR EXPLOSION OBSERVE 069 NATURE OF DISTRESS: FLOODING	0.04 LARGE LEBERG 0.05 GROWLER 0.05 GROWLER 0.05 GROGARHIC POSITION 0.07 I CEBERG MOVEMENT 0.06 SIZE OF I CEBERG 0.07 I	017 SURFACE SEA TEMPERATURE 025 GEOGRAPHICAL FOSITION OF OBSERVATION	011 SEA BOTTOM 024 OBSERVED DEPTH 025 GEOGRAPHICAL FOSITION OF OBSERVATION	012 SEA SURFACE 025 GEOGRAHICAL POSITION OF SECTION 037 SURFACE CURRENT VELOCITY	025 GEOGRAPHICAL FOSITION OF OBSERVATION 060 PRESSURE (DEPIH) VERSUS TEMPERATURE PROFILE	007 TAMEALLS 025 GEOCHAPHIC POSITION OF OBSERVATION 039 NUMBER OF TAMBALLS 056 SIZE OF TAMBALLS 057 SIZE OF AREA IN WHICH TAMBALLS FOUND	012 SEA SURFACE 025 GEOGRAPHICAL POSITION OF OBSERVATION 037 SURFACE CURRENT VELOCITY
SURVEILLANCE	ERG SUKVETIJANCE IDETECT ERG SUKVETIJANCE IDOTECT ERG SUKVETIJANCE IGOGSEKVE ERG SUKVETIJANCE IGOGSEKVE ERG SUKVETIJANCE IGOGSEKVE ERG SUKVETIJANCE IGOGSEKVE		62 OCEAN SOUNDINGS PROGRAM IDETECT 62 OCEAN SOUNDINGS PROGRAM LOCATE 62 OCEAN SOUNDINGS PHOGRAM LOCATE		YTHERMOGRAFH OBSERVATIONS LOCATE YTHERMOGRAFH OBSERVATIONS OBSERVE	65 TARBALL OBSERVATIONS DETECT 65 TARBALL OBSERVATIONS LLCCATE 65 TARBALL OBSERVATIONS OBSERVE 65 TARBALL OBSERVE 65 TARB	66 SURFACE CURRENT OBSERVATIONS IDETECT 166 SURFACE CURRENT OBSERVATIONS I.O.CATE 66 SURFACE CURRENT OBSERVATIONS 1085ERVE
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FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT DETECT 004 DATA BUDY DETECT 0.5 BUDY TELEMETRY TRANSMISSION LOCATE 0.25 GEOGRAPHICAL POSITION OF BUDY LOCATE 0.25 GEOGRAPHICAL POSITION OF BUDY LOCATE 0.25 BUDY NUMBER LOCATE 0.3 DATA BUDY RADIO TRANSMISSION FREQUENCY LOCATIFY 0.3 CHARACTERISTIC OF DATA BUDY TELEMETRY SIGNAL OBSERVE 0.38 DATA BUDY TRANSMISSION TIME SCHEDUITE	1 025 GEXCRAHICAL POSITION OF OBSERVATICATE 1037 MOVEMENT OF CLOUDS, SURFACE SWELLS 1 057 (CLOUD COVERAGE (PERCENT) 12 1059 IPERIOD OF SEAS AND SWELLS 12 1059 IPERIOD OF SEAS AND SWELLS 12 1059 IPERIOD OF SEAS AND SWELLS 15 1051 SURFACE WEATHER: TEMPERATURE 15 1061 SURFACE WEATHER: HUMIDITY 15 1065 CLOUD TYPES 16 1065 CLOUD TYPES	E 034 STRUCTURAL INTEGRITY OF FACILITY E 047 HAZARDOUS CONDITIONS OR ACTIVITIES	002 IARGE VESSEL 003 MEDIUM-SIZED VESSEL 002 NUCLEAR RADIATION 002 NUCLEAR RADIATION 002 NATIONALITY (FLAG) 002 TYPE OF VESSEL 003 VESSEL NOVEMENT 004 SUSFICIOUS ACTIVITY 004 SUSFICIOUS ACTIVITY 005 CONTRABAND: MEMICAL 005 CONTRABAND: MEMICAL 005 CONTRABAND: MEMICAL
NO. SNI PROG PA PROGRAM ACTIVITY FUNCTION FUNCTION	68 SURFACE WEATHER OBSERVATIONS LOCATE 68 SURFACE WEATHER OBSERVATIONS OBSERVE	75 FACILITY INSPECTION OBSERVE 75 FACILITY INSPECTION OBSERVE	76 SPECTAL VESSEL SURVETLIANCE 77 SPECTAL VESSEL SURVETLIANCE 78 SPECTAL VESSEL SURVETLIANCE
NO. SN PROG PA 161 0 MSA 67 IN 163 0 MSA 67 IN 164 0 MSA 67 IN 165 0 MSA 67 IN 165 0 MSA 67 IN 166 0 MSA 67 IN 167	11751 O PICSA 1681 11761 O PICSA 1681 11771 O PICSA 1681 11791 O PICSA 1681 11801 O PICSA 1681 11811 O PICSA 1681 11821 O PICSA 1681 11831 O PICSA 1681	1185 01PSS 75 F	1186 01PSS 76 187 01PSS 76 1188 01PSS 76 1189 01PSS 76 1199 01PSS 76 1191 01PSS 76 1191 01PSS 76 1194 01PSS 76 1194 01PSS 76 1196

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NO. SN PROG PA PROGRAM ACTIVITY FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	214 Olpss 78 CONTROL SELECTED VESSEL MANTS DETECT 002 LARGE THREATENING/THREATENED VESSELS 1215 Olpss 78 CONTROL SELECTED VESSEL MANTS DETECT 003 MEDIUM-SIZED THREATENED VESSELS 1216 Olpss 78 CONTROL SELECTED VESSEL MANTS DETECT 004 SMALL THREATENING/THREATENED VESSELS 1217 Olpss 78 CONTROL SELECTED VESSEL MANTS LOCATE 023 RANCE AND BEARING OF THREATENING/THREATENED VESSEL 1218 Olpss 78 CONTROL SELECTED VESSEL MANTS LOCATE 023 RANCE MASS DETECTED VESSEL MANTS LOCATE 023 RANCE 025 CONTROL SELECTED VESSEL MANTS LOCATE 027 MANTS LOCATE 037 MANTS LOCATE 047 MANTS 045 MANTS LOCATE 047 MANTS 045 MANTS	1223 01PSS 79 VESSEL TRAFFIC SERVICES DETECT 002 IABDE VESSEL IN VTS SYSTEM 1224 01 PSS 79 VESSEL TRAFFIC SERVICES 1225 01 PSS 79 VESSEL TRAFFIC SERVICES 1207 01 PSS 79 VESSEL TRAFFIC SERVICES 1007	302 6 PSS 80 OFFSHORE ASSET PROTECTION DETECT 003 MEDIUM-SIZED VESSEL 1001 APPROACHING AIRCRAFT 1003 MEDIUM-SIZED VESSEL 1005 SWALL 1005 SW

SIE SIE SCR WT.	8 1129 8 1129 8 1129 8 1129 8 1129 4 6 55 4 6 55 7 1 3 2 2 1 3 2 2 1 3 2	8 8 8 8 4 4 4 4 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT DETECT 003 MEDIUM-SIZED PARTICIPATING/INTRUDING/ENDANGERED VESSELS DETECT 003 SMALL PARTICIPATING/INTRUDING/ENDANGERED VESSELS DETECT 003 SMALL PARTICIPATING/INTRUDING/ENDANGERED VESSELS LOCATE 023 RANGE AND BEARING OF INTRUDER IDENTIFY 026 NAME OR NUMBER OF INTRUDING/ENDANGERED VESSEL OBSERVE 047 HAZARDOUS ACTIVITY OBSERVE 047 HAZARDOUS ACTIVITY	DETECT 015 PADIO TRANSMISSIONS FROM ALERTING/LOCATING DEVICE DETECT 018 LIGHT BNISSIONS FROM ALERTING/LOCATING DEVICE DETECT 020 ALERTING/LOCATING ATRAORNE SOUND BNISSIONS DCATE 022 RANGE OR BEARING OF BNITTER LICCATE 022 RANGE AND EARLING OF BNITTER LICCATE 023 GEOGRAPHICAL POSITION OF BNITTER LICCATE 025 GEOGRAPHICAL POSITION OF BNITTER LICCATE 025 GEOGRAPHICAL POSITION OF BNITTER LICCATE 025 GEOGRAPHICAL POSITION OF BNITTER LIDENTIFY 026 TYPE OF BNITTER AND CALLING UNIT LIDENTIFY 032 FREQUENCY OF ALERTING/LOCATING SIGNAL LIDENTIFY 033 FREQUENCY OF ALERTING/LOCATING SIGNAL OBSERVE 037 MOVEMENT OF CALLING UNIT OBSERVE 037 MOVEMENT OF CALLING UNIT DENTIFY 030 MOVEMENT OF CALLING UNIT DESTINATION OF ALERTING UNIT DENTIFY 031 MOVEMENT OF CALLING UNIT DENTIFY 031 MOVEMENT OF CALLING UNIT DENTIFY 031 MOVEMENT OF CALLING UNIT DENTIFY 032 MOVEMENT OF CALLING UNIT DENTIFY 033 MOVEMENT OF CALLING UNIT DENTIFY 034 MOVEMENT OF CALLING UNIT DENTIFY 034 MOVEMENT OF CALLING UNIT DENTIFY 035 MOVEMENT OF CALLING UNIT DENTIFY 037 MOVEMENT OF CALLING UNIT DENTIFY 037 MOVEMENT OF CALLING UNIT DENTIFY 037 MOVEMENT OF CALLING UNIT DENTIFY 035 MOVEMENT OF CALLING UNIT DENTIFY 037 MOVEMENT OF	DETECT 002 LARGE VESSEL DETECT 004 SMALL VESSEL DETECT 005 MAN IN WATER, DITCHED AIRCHAFT LOCATE 005 MAN IN WATER, DITCHED AIRCHAFT LOCATE 005 RANGE OR BEARING OF SEARCH OBJECT LOCATE 005 RANGE AND BEARING OF SEARCH OBJECT LOCATE 005 RANGE AND BEARING OF SEARCH OBJECT LOCATE 005 GEOGRAPHICAL POSITION OF SEARCH OBJECT LOCATE 005 GEOGRAPHICAL POSITION OF SEARCH OBJECT LOCATE 005 GEOGRAPHICAL POSITION OF SEARCH OBJECT LOCATE 005 STAPPE (APPERARALE) OF SEARCH OBJECT LOCATE 005 STAPPE (APPERARALE) OF SEARCH OBJECT OBSERVE 005 STAPPE (APPERARALE) OF SEARCH OBJECT OBSERVE 006 NATURE OF DISTRESS: DISABLED OR INJURED OGSERVE 006 NATURE OF DISTRESS: SINKING OBSERVE 0070 NATURE OF DISTRESS: AFIRE OBSERVE 0070 NATURE OF DISTRESS: AGROUND
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NO. SN PROC PA PROCRAM ACTIVITY NO. SN PROC PA PROCRAM ACTIVITY 1234 O RBS 87 RECATTA SURVEILLANCE 1235 O RBS 87 RECATTA SURVEILLANCE 1236 O RBS 87 RECATTA SURVEILLANCE 1237 O RBS 87 RECATTA SURVEILLANCE 1238 O RBS 87 RECATTA SURVEILLANCE 1239 O RBS 87 RECATTA SURVEILLANCE 1230 O RBS RANCE 1240 RBS R	240 0 SAR 90 ALERTING AND LOCATING SYSTEMS 241 0 SAR 90 ALERTING AND LOCATING SYSTEMS 341 0 SAR 90 ALERTING AND LOCATING SYSTEMS 279 0 SAR 90 ALERTING AND LOCATING SYSTEMS 243 0 SAR 90 ALERTING AND LOCATING SYSTEMS 244 0 SAR 90 ALERTING AND LOCATING SYSTEMS 245 0 SAR 90 ALERTING AND LOCATING SYSTEMS 245 0 SAR 90 ALERTING AND LOCATING SYSTEMS 245 0 SAR 90 ALERTING AND LOCATING SYSTEMS 249 0 SAR 90 ALERTING AND LOCATING SYSTEMS 249 0 SAR 90 ALERTING AND LOCATING SYSTEMS 250 0 SAR 90 ALERTING SYSTEMS 250 0 SAR 90 ALERTI	151 0 SAR 91 SURFACE SEARCH 1252 0 SAR 91 SURFACE SEARCH 1253 0 SAR 91 SURFACE SEARCH 1254 0 SAR 91 SURFACE SEARCH 1254 0 SAR 91 SURFACE SEARCH 1255 0 SAR 91 SURFACE SEARCH 1258 0 SAR 91 SURFACE SEARCH 1259 0 SAR 91 SURFACE SEARCH 1260 0 SAR 91 SURFACE SEARCH 1261 0 SAR 91 SURFACE SEARCH 1262 0 SAR 91 SURFACE SEARCH 1264 0 SAR 91 SURFACE SEARCH 1265 0 SAR 91 SURFACE SEARCH 1266 0 SAR 131 SURFACE SEA
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NO. SNI PROG PA PROGRAM ACTIVITY	PUNCTION SIE SURVEILLANCE INFORMATION ELEMENT
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SISAR 1921 UNDERWATER SEARCH	=
SISAR 1921 UNDERWATER SEARCH	LOCATE 024 DEPTH OF SUBMERSIBLE
6 SAR 192 UNDERWATER SEARCH	(LOCATE 025 GEOGRAPHICAL POSITION OF SUBMERSIBLE
6 SAR 192 UNDERWATER SEARCH	I IDENTIFY 026 NAME OR NUMBER OF SUBMERSIBLE
6 SAR 192 UNDERWATER SEARCH	IDENTIFY 029 TYPE OF SUBMERSIBLE
6 SAR 192 UNDERWATER SEARCH	OBSERVE 037 MOVEMENT OF SUBMERSIBLE
SISAR 192 UNDERWATER SEARCH	OBSERVE 067 NATURE OF DISTRESS: DISABLED
13261 61SAR 1921UNDERWATER SEARCH	IORSERVE 1071 INATURE OF DISTRESS: SINK

APPENDIX F

SURVEILLANCE REQUIREMENTS MODEL INPUTS

KEY TO COLUMN HEADINGS

NO. Unique identification number.

EVNT Event number (See Tables 5-3 and 5-4).

SN Scene (See Table 5-4).

RANK Relative importance of the event to the Coast Guard

(See Tables 5-3 and 5-4).

WT.A Weight of the event normalized to 1000 (See Tables

5-3 and 5-4).

PROG Coast Guard Operating Program abbreviation

(See Table 3-1).

WT. Program weight normalized to 1000 (See Table 6-3).

PA Program Activity code (See Table 3-3).

PA SCR Program Activity score. Estimated impact of the

event on the Program Activity:

Major (8)

Moderate (4)

Minor (2)

PA WT Relative importance of the Program Activity to its

Operating Program.

Surveillance Information (See Table 3-2)

Element Codes

(This portion of the table is a binary matrix: A 1 in any SIE column implies that the event affects the

SIE; a blank implies no impact.)

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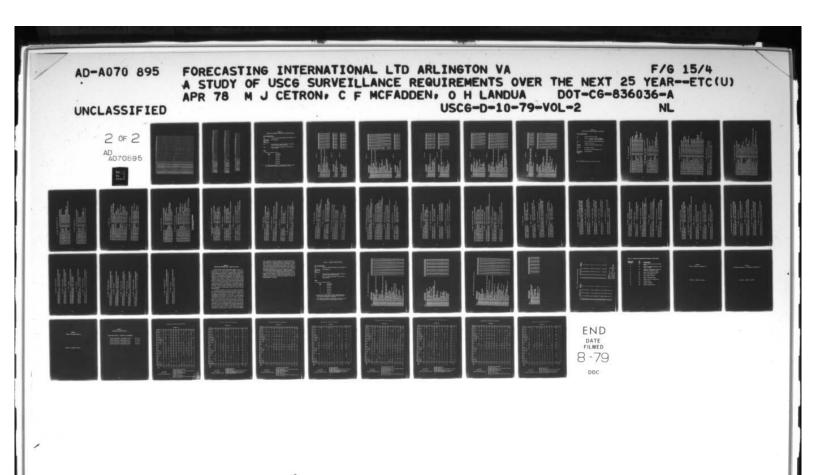
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APPENDIX G

SURVEILLANCE REQUIREMENTS MODEL RESULTS BY OPERATING PROGRAM

KEY TO COLUMN HEADINGS

SIE Surveillance Information Element code (See Table 3-2).

Surveillance Self-explanatory.

Function and SIE

Description

WT. Relative weight (normalized to 1000) of the SIE in

the scene (5-year period) indicated.

RNK Rank. The relative importance of the SIE in the

scene indicated.

NOTES

1. Scenes are defined as follows:

SCENE	TIME PERIOD
1	1980-1984
2	1985-1989
3	1990-1994
4	1995-1999
5	2000-2004

SIE weights (non-normalized) are cumulative from scene to scene,
 e.g., SIE weights in Scene 2 include weights for Scene 1.

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		BEACON, ICEBERG,				0-750 THZ)	ARKER, CHOMLER, 1			KHZ-30 GHZ)				
		OY, BEACON, ICEBERG,				(400-750 THZ)	AP MARKER, GROWLER, I			(10 KHZ-30 CHZ)				
		BUDY, BEACON, ICEBERG,				ICHT (400-750 THZ)	I TRAP MARKER, GROWLER, I		64	ADIO (10 KHZ-30 CHZ)				
		ETAL BUDY, BEACON, ICEBERG,			ULE	1: LICHT (400-750 THZ)	FISH TRAP MARKER, GROWLER, I		ANGE	1: RADIO (10 KHZ-30 CHZ)	MEER			
TION	w), METAL BUDY, BEACON, ICEBERG,			CHEDULE	SION: LIGHT (400-750 THZ)	OY, FISH TRAP MARKER, CROMLER, I	2	AR RANCE	SION: RADIO (10 KHZ-30 CHZ)	G NUMBER			
TUNCTION	3000	-40'), METAL BUDY, BEACON, ICEBERG,		N AIR	AE SCHEDULE	PMISSION: LIGHT (400-750 THZ)	, BUOY, FISH TRAP MARKER, GROWLER, I	TION	PADAR RANCE	PMISSION: RADIO (10 KHZ-30 GHZ)	PYING NUMBER			
CE FUNCTION RESCRIPTION	TIC CODE	16'-40'), METAL BUDY, BEACON, ICEBERG,		N IN AIR	I TIME SCHEDULE	TIC EMISSION: LIGHT (400-750 THZ)	ETAL BUOY, PISH TRAP MARKER, CHOWLER, I	POSITION	BIE/RADAR RANCE	TC EMISSION: RADIO (10 KHZ-30 CHZ)	ANTIFYING NUMBER	IRCS		
LLANCE FUNCTION IE DESCRIPTION	ERISTIC CODE	SEL(16'-40'), METAL BUDY, BEACON, ICEBERG,		SSION IN AIR	STON TIME SCHEDULE	CNETIC BMISSION: LICHT (400-750 TRZ)	ON-METAL BUDY, FISH TRAP MARKER, CROMLER, I	CAL POSITION	VISIBIE/RADAR RANGE	CNETIC EMISSION: RADIO (10 KHZ-30 CHZ)	IDENTIFYING NUMBER	TY ARCS		27
NO SIE DESCRIPTION	PACTERISTIC CODE	VESSEL(16'-40'), METAL BUDY, BEACON, ICEBERG,	25	EMISSION IN AIR	SMISSION TIME SCHEDULE	ROMAGNETIC EMISSION: LIGHT (400-750 THZ)	R, NON-METAL BUDY, FISH TRAP MARKER, GROWLER, I	AFHICAL POSITION	SIE/VISIBIE/KADAR RANCE	ROMACNETIC EMISSION: RADIO (10 KHZ-30 CHZ)	S OR IDENTIFYING NUMBER		**	CUENCY
SURVEILLANCE FUNCTION AND SIE DESCRIPTION	CHARACTERISTIC CODE	ALL VESSEL (16'-40'), METAL BUDY, BEACON, ICEBERG,	COLOR	UND EMISSION IN AIR	RANSMISSION TIME SCHEDULE	ECTROMAGNETIC BMISSION: LIGHT (400-750 THZ)	WER, NON-METAL BUDY, PISH TRAP MARKER, CHOMICE, I	OGRAFHICAL POSITION	UDIBLE/VISIBLE/HADAR RANGE	ECTROMAGNETIC EMISSION: RADIO (10 KHZ-30 CHZ)	NAME OR IDENTIFYING NUMBER		SHAPE	FREQUENCY
SURVEILLANCE PUNCTION AND SIE DESCRIPTION	PY: CHARACTERISTIC CODE	: SMALL VESSEL(16'-40'), METAL BUDY, BEACON, ICEBERG,	PY: COLOR	: SOUND EMISSION IN AIR	E: TRANSMISSION TIME SCHEDULE	: ELECTROMAGNETIC EMISSION: LIGHT (400-750 THZ)	SWINNER, NON-METAL BUDY, FISH TRAP MARKER, CROMICR, I	: GEOGRAPHICAL POSITION	E: AUDIBLE/VISIBLE/RADAR RANGE	: ELECTHOWAGNETIC EMISSION: RADIO (10 KHZ-30 CHZ)	FY: NAME OR IDENTIFYING NUMBER		FY: SHAPE	PY: FREQUENCY
SURVEILLANCE FUNCTION AND SIE DESCRIPTION	ENTIFY: CHARACTERISTIC CODE	TETT: SMALL VESSEL(16'-40'), METAL BUDY, BEACON, ICEBERG,	IN IPY: COLOR	TECT: SOUND EMISSION IN AIR	SERVE: TRANSMISSION TIME SCHEDULE	TECT: ELECTROMAGNETIC BMISSION: LIGHT (400-750 THZ)	TECT: SWIMMER, NON-METAL BUDY, PISH TRAP MARKER, CROMICR, I	CATE: CEOGRAPHICAL POSITION	SERVE: AUDIBLE/VISIBLE/RADAR MANCE	TECT: ELECTHOMAGNETIC EMISSION: RADIO (10 KHZ-30 GHZ)	ENTIFY: NAME OR IDENTIFYING NUMBER		CATIFY: SHAPE	INTIPY: FREQUENCY
	IDENTIFY: CHARACTERISTIC CODE	(DETECT: SMALL VESSEL(16'-40'), METAL BUDY, BEACON, ICEBERG,	I IDEN IPY: ODIOR	DETECT: SOUND EMISSION IN AIR	COBSERVE: TRANSMISSION TIME SCHEDULE	INDETECT: ELECTROMAGNETIC BMISSION: LIGHT (400-750 TBZ)	I DETECT: SWINNER, NON-METAL, BUCY, PISH THAP MARKER, CHOMILER, I	STOCATE: GEOGRAPHICAL POSITION	COESEIVE: AUDIBLE/VISIBLE/HADAR MANGE	(DETECT: ELECTHORAGNETIC BAISSION: RADIO (10 KHZ-30 GHZ)	(IDENTIFY: NAME OR IDENTIFYING NUMBER		I I I I SHAPE	HIDENTIFY: FREQUENCY
SURVETILIANCE PUNCTION SIE AND SIE DESCRIPTION	(033) IDENTIFY: CHARACTERISTIC CODE	(004)DETETT: SMALL VESSEL(16'-40'), METAL BUOY, BEACON, ICEBERG, AFLOAT SEAFLANE	1030 IDEM IPY: COLOR	(019) DETECT: SOUND EMISSION IN AIR	1038/OBSERVE: TRANSMISSION TIME SCHEDULE	(018) DETECT: ELECTROMAGNETIC EMISSION: LIGHT (400-750 THZ)	1005 DETECT: SNIMMER, NON-METAL BLOY, FISH THAP MARKER, GROWLER, DITCHED AIRCRAFT	1025/10CATE: GEOGRAPHICAL POSITION	1035/OESERVE: AUDIBLE/VISIBLE/RADAR RANCE	(915) DETECT: ELECTROMAGNETIC EMISSION: RADIO (10 KHZ-30 CHZ)	1026/IDENTIFY: NAME OR IDENTIFYING NUMBER	1036 OBSERVE: VISIBILITY ARCS	1031 I I DENTIFY: STAPE	1032/IDENTIFY: FREQUENCY

PROGRAM: BA

SAN MILITARY	308
SIE AND SIE DESCRIPTION	002 DETECT: LARGE VESSEL (150'+) 003 DETECT: MEDIUM SIZED VESSEL (40'-150') 039 OESSERVE: NUMBER OF OBJECTS PER TIME INTERVAL 022 LOCATE: RANGE OR BEARING

PROGRAM: CVS

11E) 134 OBSERVE: 123 LOCATE: 124 LOCATE:	SIE AND SIE DESCRIPTION AND SIE DESCRIPTION 034 OBSERVE: STRUCTURAL INTEGRITY 023 LOCATE: RANGE AND EFARING 024 LOCATE: ALITTUDE OR DEPTH	
3 DETECT:	013 DETECT: LICUTO POLLUTANT	
2 LOCATE:	022/LOCATE: RANGE OR BEARING	
5 LOCATE:	025/LOCATE: GEOGRAPHICAL POSITION	

| SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN | E | SCEN |

SCENIE 1 ISCENIE 2 ISCENIE 3 ISCENIE 4 ISCENIE 5	THE TOTAL MAY THE MAN AT A PARTY AND A PAR	731 71 981 21 1031 11 1031 11 1031 1	11 106 11 971 31 971 31	151 831 41 881 41 881 41	6 80 5 78 5 78 5	7	131 531 71 541 71 541 71	14 41 11 42 8	16 104 16 104 16 16	7	31 451 81 401 91 401 91 401	16 26 12 27 12 27 12 27 12 20	22 22 18 25 13 25 13 25	12 23 14 24 14 24 14 24	131 211 151 211 151 211	91 22 15 20 16 20 16 20	91 22 15 20 16 20 16 20	91 22 15 20 16 20 16 20 1	1 24 5 57 15 15 19 15 15 15 15	24 5 27 15 19 15	1 24 5 27 15 19 15 19 15 19 15	191 111 221 111 221 111	5 23 5 23 51	5 23 5 23 5 5 23	1 8 20 5 23 5 23 5	23 1 31 4 26 4 26 4	17 5 23 4 27 4 27 4 27 4	4 27 4	17 5 23 4 27 4 27 4	171 51 231 41 271 41	31 311 31
28.		- The state of the	SMALL VESSEL(16"-40"), METAL BUDY, BEACON, ICEBERG, APLOAT SEAPLANE 1		7					The state of the s									-		<u> </u>			NG POLLUTANT	INTEREST	<u> </u>					
SURVEILLANCE FUNCTION	TO ON	1025 LOCATE: GEOGRAPHICAL POSITION	1004 DETECT: SMALL VESSEL(16"-40"), METAL BUX			1037 OBSERVE: MOVEMENT OF CRUECT OF INTEREST	1027 IDENTIFY: FIAG (U.S. OR FOREIGN)	1035 DETECT: SWINNER, NON-METAL BLOY, FISH TRAP MARKER, GROWLER, DITCHED AIRCRAFT	10361 COSERVE: CONTRACTOR DE LA COSE	10531 OESERVE: CONTRABAND: WEARONS AND MUNITIONS	1054 OBSERVE: TLLEGAL ALTENS	029 IDENTIFY: TYPE	1040 OBSERVE: FISHING ACTIVITY	1044 OBSERVE: SUSPICIOUS ACTIVITY: PLEEING	1047 CESERVE: HAZARDOUS ACTIVITY	1023 LOCATE: RANGE AND BEARING	1042 OBSERVE: SUSPICIOUS ACTIVITY: HOVERING	1043 OBSERVE: SUSPICIOUS ACTIVITY: TRANSFERRING CARGO	1048 OBSERVE: FISH CATCH: SPECIES	049 OBSERVE: FISH CATCH: FISH SIZE	1050 OBSERVE: FISH CATCH: QUANTITY	007 DETECT: SOLID FOLLUTANT, TARBALL	011 DETECT: SEA BOTTOM	1045 OBSERVE: SUSPICIOUS ACTIVITY: DISCHARGING POLLUTANT	1057 (OESERVE: AREA COVERED BY OBJECT(S) OF IN	1041 OBSERVE: FISHERY SUPPORT OPERATIONS	1030 IDENTIFY: COLOR	031 IDENTIFY: SHAPE	1035 OBSERVE: AUDIBLE/VISIBLE/RADAR RANGE	1036 CBSERVE: VISIBILITY ARCS	1024 LOCATE: ALTITUDE OR DEPTH

PROGRAM: 10

SCENIE 1 SCENIE 2 SCENIE 3 SCENIE 4 SCENIE 5 WT. RNK WT. RNK WT. RNK WT. RNK WT. RNK	11 222 11 222 11 222	11 222 11 222 11 222	11 2221 11	41 1111 41 1111 41 1111	4 111 4 1111 4 1111	
SURVEILLANCE FUNCTION SIE AND SIE DESCRIPTION	006 DETECT: ICE FIELD, ICE JAM	025 LOCATE: GEOCRAPHICAL POSITION	055/OBSERVE: ICE THICKNESS	029 IDEATIFY: TYPE	037/GESERVE: MOVEMENT OF GRIECT OF INTEREST	0571 CBSERVE: AREA COVERED BY OBJECT(S) OF INTEREST

PROCEAM: MEP

-	SURVETLZANCE PUNCTION	28	ENIE 1	SCEN	E 2	SCENI	3 5	CONIE	415	CENIE	15	
SIE	AND SIE DESCRIPTION	3	T. ROW	. M.	FORK	MT.	200	W. IB	DAK	H. H	M	
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013 DETECT: 1	013 DETECT: LIQUID FOLLUTANT	11	1 1361 11 1401 11 1401 11 1421 11 1421 11	1 140	7	140	1	142	7	1 11 142	11	
025 LOCATE: C	EDCRAMICAL POSITION	1 1	361 1	140	11	140	1	142	1	142	7	
007 DETECT: 5	SOLID POLLUTANT, TARBALL	11	331 3	129	3	129	3	128	3	128	3	
021 DETECT: 1	UCIEAR RADIATION: ALPHA AND BETA PARTICLES, CAMPA RAYS	11	331 3	129	31	129	3	128	3	1261	3	
014 DETECT: C	EASEOUS POLLUTIANT		841 5	1 82	5	81	5	81	Si	87	2	
029 IDENTIFY	: TYPE	_	841 5	1 82	15	13	5	811	2	811	5	
037 OBSERVE:	MOVEMENT OF ORJECT OF INTEREST	-	7 189	1 70	71	701	7	711	11	111	1	
057 OBSERVE:	AKEA COVERED BY OBJECT(S) OF INTEREST	_	7 189	1 70	71	107	7	711	7	711	71	
060 CESERVE:	PROPILES: DEPTH VS TEMPERATURE	_	561 9	28	6	R	5	38	5	38	6	
061 CBSERVE:	PROPILES: DEPTH VS SALINITY	_	581	38	6	R	6	38	6	3	6	
045 GBSPRVE:	SUSPICIOUS ACTIVITY: DISCHARGING ROLLIMANT		421 11	41	111	401	111	401	111	401	111	

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SCENIE 1 SCENIE 2 SCENIE 3 SCENIE 4 SCENIE 5 WT. RAKI WT. RAKI WT. RAKI WT. RAKI WT. RAKI WT. RAKI WT. RAKI	11 2151 11	21 1601 21 1601 21 1601	31 861 31 861 31 861	31 861 31 861 31 861	81 731 51 731 51 731	1 561 61 731 51 731 51 731 51	127 17 127 17 127 18	61 641 81 641 81 641	71 501 91 501 91 501	10 43 10 43 10 43	111 311 111 311 111 311	111 251 121 251 121 251	131 221 131 221 131 221
SCEN.		_	_	_	_	_	-	-	-	-	-	-	-
THE COLD COLD		N, ICEBERG, APLOAT SEAPLANE!											
SURVEILLANCE PUNCTION STE AND SIE DESCRIPTION	1023/LOCATE: RANCE AND BEARING	1004 DETECT: SMALL VESSEL(16'-40'), METAL BUDY, BEACO	1037/OBSERVE: MOVEMENT OF ORJECT OF INTEREST	1046 GBSERVE: HOSTILE ACTIVITY	(002) DETECT: LARCE VESSEL (150'+)	1003[DETECT: MEDIUM SIZED VESSEL (40'-150')	1029 IDENTIFY: TYPE	1028 I DENTIFY: FRIEND OR FOE	1024 LOCATE: ALTITUDE OR DEPTH	1025/LOCATE: GEOGRAPHICAL POSITION	1001 DETECT: AIRBORNE AIRCRAFT, MISSILE, AIRBHID	1010 DETECT: LARCE SUBMERGED SUBMARINE	1035/OBSERVE: ALDIBIE/VISIBIE/RADAR RANCE

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SURVEILLANCE FUNCTION SIE DESCRIPTION		025/10CATE: GEOGRAPHICAL POSITION	017; DETECT: ELECTROMAGNETIC EMISSION: HEAT (1-400 THZ)	037/OBSERVE: MOVENENT OF OBJECT OF INTEREST	012 DETECT: SEA SURFACE	007 DETECT: SOLID FOLLITANT, TARBALL	039/OBSERVE: NUMBER OF OBJECTS PER TIME INTERVAL	060 OBSERVE: PROFILES: DEPTH VS TEMPERATURE	011 DETECT: SEA BOTTOM	024 LOCATE: ALTITUDE OR DEPTH	057 OBSERVE: AREA COVERED BY OBJECT(S) OF INTEREST	056 OBSERVE: SIZE OF OBJECT	0631 OBSERVE: SURFACE WEATHER: PRESSURE	066 OBSERVE: WIND VELOCITY	058/OBSERVE: SEAS AND SKELLS: HEIGHT	059 OBSERVE: SEAS AND SWELLS: PERIOD	0621 OBSERVE: SURFACE WEATHER: TEMPERATURE	064 CESERVE: SURFACE WEATHER: HUMIDITY	106510BSERVE: CLOUD TYPE

PROGRAM: PSS

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					BEACON, ICEBERG,							MARKER, GROWIER, D					4	SUNKEN VESSEL			PARTICLES, GAMMA R	CARGO	RADIOLOGICAL DEVIC	At.	
				-	UOY, BEACON, ICEBERG,							RAP MARKER, GROWLER, I				IONS	RSHIP	INE, SUNKEN VESSEL			ETA PARTICIES, CAMMA R	RING CARGO	CAL, PADIOLOGICAL DEVIC	TERVAL	
		50.)		EREST	AL BUDY, BEACON, ICEBERG,				83			SH TRAP MARKER, GROWLER, I		RING		UNITIONS	, AIRSHIP	E, MINE, SUNKEN VESSEL			ND BETA PARTICLES, CAMMA R	SPERRING CARGO	LOCICAL, PADIOLOGICAL DEVIC	E INTERVAL	
K =)'-150')		INTEREST	METAL BUDY, BEACON, ICEBERG,				VUMBER			, FISH TRAP MARKER, GROWLER, I	(ER)	OVERING		AD MUNITIONS	SILE, AIRSHIP	SIBLE, MINE, SUNKEN VESSEL			IA AND BETA PARTICLES, GAMMA R	TRANSFERRING CARGO	BIOLOGICAL, RADIOLOGICAL DEVIC	TIME INTERVAL	
CTION		. (40'-150')		OF INTEREST	11), METAL BUOY, BEACON, ICEBERG,				ING NUMBER	NO	TY	MOY, FISH TRAP MARKER, GROWLER, I	MIMMER)	TY: HOVERING	(EICN)	IS AND MUNITIONS	MISSILE, AIRSHIP	WERSTBLE, MINE, SUNKEN VESSEL			ALPHA AND BETA PARTICLES, CAMMA R	Y: TRANSFERRING CARGO	AL, BIOLOGICAL, PADIOLOGICAL DEVIC	PER TIME INTERVAL	
FUNCTION	VITY	SSEL (40'-150')	20,+)	JECT OF INTEREST	'-40'), METAL BUDY, BEACON, ICEBERG,	NG	77			SITION	EGRITY	AL BUDY, FISH TRAP MARKER, GROWLER, I	ER SWIMMER)	IVITY: HOVERING	FOREIGN)	APONS AND MUNITIONS	FT, MISSILE, AIRSHIP	SUBMERSIBLE, MINE, SUNKEN VESSEL		THE STATE OF THE S	ON: ALPHA AND BETA PARTICLES, GAMMA R	IVITY: TRANSFERRING CARGO	ENICAL, BIOLOGICAL, PADIOLOGICAL DEVIC	CTS PER TIME INTERVAL	
DESCRIPTION	CTIVITY	D VESSEL (40'-150')	£ (150*+)	F OBJECT OF INTEREST	L(16'-40'), METAL BUDY, BEACON, ICEBERG,	EARING	FIVITY			L POSITION	INTEGRITY	-METAL BUDY, FISH TRAP MARKER, GROWLER, I	MATER SWIMMER)	ACTIVITY: HOVERING	OR FOREIGN)	: WEAPONS AND MUNITIONS	ACKAPT, MISSILE, AIRSHIP	ICED SUBPERSIBLE, MINE, SUNKEN VESSEL	JECT	низо	IATION: ALPHA AND BETA PARTICLES, CAMMA R	ACTIVITY: TRANSFERRING CARGO	HENTCAL, BIOLOGICAL, PADIOLOGICAL DEVICES	OBJECTS PER TIME INTERVAL	ENS
SILLANCE FUNCTION SIE DESCRIPTION		SIZED VESSEL (40'-150')	SSEL (150'+)	IT OF OBJECT OF INTEREST	SSEL(16'-40'), METAL BUDY, BEACON, ICEBERG,	ID BEARING	2 ACTIVITY		IDENTIFYING	IICAL POSITION		NON-METAL BUDY, FISH TRAP MARKER, GROWLER, I	INDERWATER SWIMMER)			JAND: WEAPONS AND MUNITIONS	: AIRCRAFT, MISSILE, AIRSHIP	IBMERGED SUBMERSIBLE, MINE, SUNKEN VESSEL	' OBJECT	OR DEPTH	RADIATION: ALPHA AND BETA PARTICLES, CAMMA R		ö	OF OBJECTS PER TIME INTERVAL	, ALIENS
AND SIE DESCRIPTION		UM SIZED VESSEL (40'-150')	E VESSEL (150'+)	PARENT OF ORJECT OF INTEREST	I VESSEL (16'-40'), METAL BUOY, BEACON, ICEBERG,	E AND BEARING	TILE ACTIVITY	34	IDENTIFYING	RAHICAL POSITION		ER, NON-METAL BUDY, FISH TRAP MARKER, GROWIER, I	TR (UNDERWATER SWIMMER)			TTRABAND: WEAPONS AND MUNITIONS	ORNE AIRCRAFT, MISSILE, AIRSHIP	I. SURMERGED SUBMERSIBLE, MINE, SUNKEN VESSEL	E OF OBJECT	TUDE OR DEPTH	EAR PADIATION: ALPHA AND BETA PARTICLES, CAMMA R		ö		ECAL ALIENS
AL I		MEDIUM SIZED VESSEL (40'-150')	LARGE VESSEL (150'+)	MOVEMENT OF ORJECT OF INTEREST	SMALL VESSEL(16'-40'), METAL BUOY, BRACON, ICEBERG,	RANCE AND BEARING	HOSTILE ACTIVITY	: TYPE	IDENTIFYING	GEOGRAPHICAL POSITION		WINNER, NON-METAL BUOY, FISH TRAP MARKER, GROMIER, I	DIVER (UNDERWATER SWIMMER)			CONTRABAND: WEAPONS AND MUNITIONS	AIRBORNE AIRCRAFT, MISSILE, AIRSHIP	SHALL, SURMERGED SUBMERSIBLE, MINE, SUNKEN VESSEL	STZE OF OBJECT	ALTITUDE OR DEPTH	MUCLEAR RADIATION: ALPHA AND BETA PARTICLES, GAMMA R		ö	NUMBER OF	TLIBGAL ALIENS
SURVEILLANCE FUNCTION AND SIE DESCRIPTION		CT: MEDIUM SIZED VESSEL (40'-150')	CT: LARGE VESSEL (150'+)	RVE: MOVEMENT OF CRUECT OF INTEREST	CT: SMALL VESSEL(16'-40'), METAL BUDY, BEACON, ICEBERG,	TE: RANGE AND BEARING	RVE: HOSTILE ACTIVITY	TIPY: TYPE	IDENTIFYING	TE: GEOGRAPHICAL POSITION		CT:SWINNER, NON-METAL BUDY, FISH TRAP MARKER, GROWIER, I	CT: DIVER (UNDERWATER SWIMMER)			RVE: CONTRABAND: WEAPONS AND MUNITIONS	CT: AIRBORNE AIRCRAFT, MISSILE, AIRSHIP	CT: SWALL SUBMERGED SUBMERSIBLE, MINE, SUNKEN VESSEL	RVE: STZE OF OBJECT	TE: ALTITUDE OR DEPTH	CT: NUCLEAR RADIATION: ALPHA AND BETA PARTICLES, GAMMA R		ö	NUMBER OF	
		DETECT: MEDIUM SIZED VESSEL (40'-150')	DETECT: LARGE VESSEL (150'+)	DESERVE: MOVEMENT OF OBJECT OF INTEREST	DETECT: SMALL, VESSEL(16'-40'), METAL BUOY, BEACON, ICEBERG,	COCATE: RANGE AND BEARING	DESERVE: HOSTILE ACTIVITY	IDENTIFY: TYPE	IDENTIFYING	LOCATE: GEOGRAPHICAL POSITION		DETECT: SWINNER, NON-METAL BUDY, FISH TRAP MARKER, GROWLER, I	DETECT: DIVER (UNDERWATER SWIMMER)			RESERVE: CONTRABAND: WEAFONS AND MUNITIONS	XETECT: AIRBORNE AIRCRAFT, MISSILE, AIRSHIP	DETECT: SWALL, SUBMERGED SUBMERSTBLE, MINE, SUNKEN VESSEL	DESERVE: STZE OF ORJECT	OCATE: ALTITUDE OR DEPTH	DETECT: NUCLEAR RADIATION: ALPHA AND BETA PARTICLES, CAMMA R		ö	NUMBER OF	
SIE AND SIE DESCRIPTION	RVE: HAZARDOUS	003 DETECT: MEDIUM SIZED VESSEL (40'-150')	002[DETECT: LARGE VESSEL (150'+)	037 COSSERVE: MOVEMENT OF OBJECT OF INTEREST	004 DETECT: SMALL VESSEL(16'-40'), METAL BLOY, BEACON, ICEBERG, APLOAT SEAPLANE	023/IOCATE: RANGE AND BEARING	046 OBSERVE: HOSTILE ACTIVITY	029 IDENTIFY: TYPE		025/LOCATE: GEOGRAPHICAL POSITION	034 OESERVE: STRUCTURAL INTEGRITY	005 DETECT:SWIBMER, NON-METAL BUOY, FISH TRAP MARKER, GROWLER, DITCHED AIRCRAFT	038 DETECT: DIVER (UNDERWATER SWIMMER)			053 OBSERVE: CONTRABAND: WEAPONS AND MUNITIONS	001 DETECT: AIRBORNE AIRCRAFT, MISSILE, AIRSHIP	009 DETECT: SHALL SUBMERGED SUBMERSTBLE, MINE, SUNKEN VESSEL	056 OBSERVE: STZE OF ORJECT	024 LOCATE: ALTITUDE OR DEPTH	021 DETECT: NUCLEAR RADIATION: ALPHA AND BETA PARTICLES, CAMMA RAYS	SUSPICIOUS	ö	NUMBER OF	054 CESERVE: ILLEGAL ALIENS

PROCRAM: RBS

28	1	7	7	7	7	19	19
85	1671	167	167	167	167	831	631
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E 3	=	=	=	=	=	9	19
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		SEAPLAN	ATRCRA				
		APLOAT	TOHED				
	(003) DETECT: MEDIUM SIZED VESSEL (40'-150')	ICEBERG,	GROWLER, I				
		BEACON,	ARKER,				
		BUOY,	TRAP N	ISI			
	-150	ETAL.	FISH	NTER			MBER
NOI	(40	M	70	00			G NU
SURVEILLANCE FUNCTION AND SIE DESCRIPTION	SSEL	-40	AL BU	JECT	VIII	NG	IPYIN
ANCE	D VE	T.(16	LMET	F CB	ACTI	EARI	DENT
VEIL D SIE	SIZE	VESSI	ON .	ENT C	Shod	AND E	96
SS	DION	MIL	IMMER	OVEN	HAZAR	THE	NAME
	T: M	T: 5	T:SM	VE: 1	VE: I	E: R	IPY:
	ETEC	ETEC	ETEC	BSER	BSER	DCAT	026 I DENTIPY: NAME OR IDENTIFYING NUMBER
STE	00311	03411	0051	037 OBSERVE: MOVEMENT OF OBJECT OF INTEREST	1047 OBSERVE: HAZARDOUS ACTIVITY	023 LOCATE: RANGE AND BEARING	0261
			-	-		-	-

PROGRAM: SAR

SCENIE 11 SCENIE 21 SCENIE 31 SCENIE 41 SCENIE 51 WT. FRW. WT. FRW. WT. FRW.	4 21 71 3 65 1 65 1 65 1	77	71 571 51 611 41 611 41	15	19 105 19 105 18 1	171 32	32 17 45 7 45 7	241 321 171 451 71 451 71 451	39! 9! 40! 10! 40! 10! 40!	111 391 91 401 101 401 101 401	391 91 401 101 401 101 401	39! 9! 40! 10! 40! 10! 40!	111 391 91 401 101 401 101 401	391 91 401 101 401 101 401	111 391 91 401 101 401 101 401	31 501 61 321 171 321 171 321	50 6 32 17 32 11 32	91 301 201 29 191 291 191 291	32 16 28 20 28 20 28	8 25 11 21 11 21 11	8 25 11 21 11 21 11	101 221 101 231 101 231 101	101 221 101 231 101 231 101	8 18 10 22 10 23 10 23 10 23 10 23	131 211 81 261 81 261 81
SURVETLIZANCE PUNCTION STE DESCRIPTION	LOCATE: PANG	GEOGRAPHIC	1020 DETECT: SOUND EMISSION IN WATER	029 IDENTIFY: TYPE	1026 IDENTIFY: NAME OR IDENTIFYING NUMBER	1015/DETECT: ELECTHORAGNETIC EMISSION: RADIO (10 KHZ-30 GHZ)	018 DETECT: ELECTROMAGNETIC EMISSION: LIGHT (400-750 THZ)	1019 DETECT: SOUND EMISSION IN AIR	002 DETECT: LARGE VESSEL. (150°+)		1004 DETECT: SMALL VESSEL(16'-40'), METAL BLOY, BEACON, ICEBERG, AFLONT SEAFANE!	1035 DETECT: SWIMMER, NON-METAL BLOY, PISH TRAP MARKER, GROMIZER, DITCHED AIRCRAFT!	1068 CESERVE: NATURE OF DISTRESS: APIRE	069 OBSERVE: NATURE OF DISTRESS: SINKING	1070 OBSERVE: NATURE OF DISTRESS: ACHOUND	1009 DETECT: SMALL SUBMERGED SUBMERGIBLE, MINE, SLAKEN VESSEL	024 LOCATE: ALTITUDE OR DEPTH	037 OBSERVE: MOVEMENT OF ORJECT OF INTEREST	1967] OBSERVE: NATURE OF DISTRESS: DISABLED OR INJURED	032 IDENTIFY: FREQUENCY	033 IDENTIFY: CHARACTERISTIC CODE	030 IDENTIFY: COLOR	031 IDENTIFY: SHAPE	105610BSEKVE: SIZE OF OBJECT	1071 OBSERVE: NATURE OF DISTRESS: SUNK

APPENDIX H

DETAILED SURVEILLANCE REQUIREMENTS IN RANK ORDER

KEY TO COLUMN HEADINGS

NO. Unique identification number.

SN Scene: 0 implies a current requirement.

6 implies a future requirement.

PROG Coast Guard Operating Program abbreviation.

PA Program Activity code.

Program Distinct surveillance-related operation.

Activity

Function Surveillance function.

SIE Surveillance Information Element code.

Surveillance Self-explanatory.

Information Element

Note: Requirements are listed in Scene 5 rank order.

023: LOCATE: RANGE AND BEARING

FUNCTION SIE SURVEILANCE INFORMATION ELEMENT	1023 RANGE AND BEARING TO SMUGGLING VESSEL	EARING OF	1023 KANGE AND BEARING OF TARGET/AIMING POINT 1023 KANGE AND BEARING OF TARGET/AIMING POINT 1023 WAYER AND EASTING OF THE BEARTHAINE INSCREED	1023 RAYGE AND BEARING OF THREATENING/THREATENED VESSELS 1023 RAWGE AND BEARING OF THREATENING/THREATENING 1023 RAWGE AND BEARING TO VESSELS IN UTS. SYSTEM	1023 RANGE AND BEARING OF INTHUER 1023 RANGE AND BEARING OF EMITTER	10231 KANGE AND BEARING OF SEARCH OBJECT 10231 HORIZOATAL POSITION OF DEFECT IN THE STRUCTURE	1023 HORIZONTAL POSITION OF DEFECT IN THE STRUCTURE 1023 RANGE AND BEARING OF THREAT 1023 KNAGE AND BEARING OF SUBMERSIBLE
FUNCTION	LOCATE	LOCATE	LOCATE	IS LOCATE	LOCATE NS LOCATE	LOCATE ON LOCATE	N LOCATE LOCATE LOCATE
NO, ISNIPROGIPAL PROGRAM ACTIVITY	K SURVEILLA	94 O MOMP SU AAN SUKVEILLANCE 031 O MOMP SI ASUN SUKVEILLANCE	1169 O'BOME 34 NGS SURVEILIANCE LICCATE COCATE	236 0 RBS 67 REGALTA SURVETLIANCE LLOCATE 244 0 SAR 190 ALERTING AND LOCATING SYSTEMS LLOCATE	256 0[SAR [91]SURFACE SFARCH 293] 6[CVS]14[UNDERSEA STRUCTURE INSPECTION	3001 61CVS (13)OFFSHORE PLATFORM INSPECTION 3081 61PSS (80)OFFSHORE ASSET PROTECTION 3191 61SAR (92)UNDFMATER SEARCH	
2	- 00	57.	125	120	22	22	MME.

004: DETECT: SMALL VESSEL (16' - 40'), METAL BUOY, VISIBLE OBJECT (BEACON), LARGE ICEBERG, AFLOAT SEAPLANE

										ESSETS.		
FUNCTION STEESURVETLANCE INFORMATION ELEMENT	DETECT 304 METAL BUDY	1904 BEACON, VISCAL OR RADAR	1004 SMALL VESSEL	1004 SPINIT, VESSLT,	1994 ITAND TAKEET OR AIMING POINT	1004 JAKGE LJEBERG	1004 DATA EUCY	1004 SPALL TEMPATERING VESSELS	(034 SMALL, THREATENING/THREATENED VESSELS	1004 SHALL PARTICIPATING/INTHUDING/ENDANGERED VESSETS	1994 SMALL VESSEL, AFLONT SEAPLANE	DETECT 1904 SMALL VESSEL
FUNCTION	DETECT	DETECT	DETECT	DETLOT	DETECT	DETECT	DETECT	E DETECT	DETECT	DETECT	DETECT	TC3T301
NO. SN PROG PA PROGRAM ACTIVITY	001 0 AN 1 1 FUOY SURVETLIFAINCE	007) 01AN ZIBEACON SURVETLIANCE 0461 01ETF 1211GEAR CONFILCT SURVETLIANCE	057 0 ELT 22 ANTI-SMUCCLING SURVEILLANCE	102 OLMONIP 51 ASUM SURVETTIANCE	115 O MOMP 53 NGFS SURVETTIANCE	137 0 MSA 160 ICEBERG SURVELTANCE	1611 01MSA 1671NATIONAL DATA BUOY PROGRAM	0 PSS 77 PORT AND KATERWAY SURVETTIANCE DETECT	216 3 PSS (78 CONTROL SELECTED VESSEL, MANTS (DELECT	234 OTRBS 187 RECATTA SURVETLIANCE	253 01SAR 1911SURFACE SEARCH	304 6 PSS 180 OFFSHORE ASSET PROTECTION
NO.	1001	1007	1057	1102	1115	1137	1161	12021	1216	1234	1253	1304

025: LOCATE: GEOGRAPHICAL POSITION

		VESSEL	VESSULS AND MARKERS	SMUCCLING VESSEL	22		-	12	025/GECGEAPHICAL POSITION OF TARGET/AIMING POINT			100	NOI		NOI	2	NOI.		NOI.	SPECIAL INTEREST VESSEL	VESSEL	VESSETS IN VIS SYSTEM		KJECT.	MINING VESSET, ON FLOATING PLANT		BLE	T
ELDABAT	BUOY	FISHING	VESSUS.	SMUGGLIN	SCHIELDS	ICE JAMS	POLLLITANI	POLLUTANT	TAKGET/			OBSERVAT	OBSERVAT	SECTION	OBSERVAT	SERVATIO	CUSENVAT	EUCY	CESERVA	SPECIAL	SELECTED VESSEL	VESSETS	EMITTER	SEARCH OEJECT	MINING V	OFFECT	SUEMERS	POLLUTIAN
S	-	8	3	3	5	3	3	5	8			3	8	6	3	F CB	3	5	3	ਤੋ	5	8	3			3	G	8
INFORMAT	POSITION	POSITION	PUSITION:	POSITION.	MOSTYTION.	HOSTITION	POSTT10N	POSTITION	POSITION	POSITION	NOLLIS	HOSTITION	FOSTITION	POSITION	POSTTION.	DESTIGNED	PCS1T10N	POSTTION	POSITION	POSTITION.	POSITION	POSTITION.	POS 17 TON	POSTITION.	HOSTITION	KSTIG	POSITION	POST'I TON
FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	225 GEOGRAPHICAL POSITION OF BUDY	225 GEOGRAPHICAL POSITION OF FISHING VESSEL	025 GEOGRAPHICAL POSITION OF	025 GEOGRAPHICAL POSITION OF	325 GEOCHAPHICAL POSITION OF	325 GLCGHAPHICAL POSITION OF	025/GEOGHAPHICAL POSITION OF	325 GEOGRAPHICAL POSTITION OF	GRAPHICAL	225/GEOGRAPHICAL POSITION	025 GEOGRAPHIC POSTITION	025 GELCHALHICAL POSTITION OF OBSERVATION	325/GEOGRAPHICAL ROSTITION OF OBSERVATION	925/GEOGRAPHICAL POSITION OF SECTION	025/GEOGRAPHICAL POSITION OF OBSERVATION	025/GEOGRAPHIC MISTITION OF OBSERVATION	225 GEOGRAPHICAL POSITION OF OBSERVATION	D25/GEOGRAPHICAL POSTITION OF BUOY	325/GEOGMAPHENT, POSITION OF GESENVALION	225 GEOGRAPHICAL POSTITON OF	025 GEOCHAPHICAL POSITION OF	225 GEOGRAPHICAL POSTITION OF	025 GEOGRAPHICAL POSITION OF	025 GESGRAPHICAL POSTITION OF	025/GEOGRAPHICAL ROSTITION OF	025/GEOGRAPHICAL MATTION OF DEPENT	225/GETGEARTICAL POSITION OF SUBHERSIBLE	025/GEOGRAPHICAL POSTITION OF POLIZITANT
SIEISU	1225 GE	1025/GEC	1025 GFC	1025 CEC	1325 GEC	1325/GU	1025 GEC	1325 GEC	1025 GEC	1025 CEC	1025 GEC	1025 GE	1025/660	1025 GEG	10251GEC	1025 GEC	1325 GEC	1325/GEC	1025/GEC	1025/GEC	1025 GEC	1025 GEC	1025 GE	1025 GE	10251GE	(025/GEC	1325 GE	10251GE
-	-	LOCATE	TYCOT!	LUCCATE	LOCATE	LOCATE	1 TOCATE	LIDCATE	TOCATE	LOCATE	I LOCATE	I LOCATE	LOCATE	17OCATE	LOCKIE	TLACATE	TOCATE	LOCATE	TOTALE	TOCATE	TOCATE	LOCATE	LOCATE	LUCALE	I LOCATE	L'OCATE	LOCATE	LOCATE
	AN 1 BUOY SURVETLIANCE	DIELT 1201 PISHING VESSEL SURVEILLANCE	121 GEAR	OFETA (22) ANTI-SNUGGLING SURVETLIANCE	30 ICE	01 TO 131 FLOOD (TOE JAM) SURVETLIANCE	DIMER 1401 COASTAL POLIUTION SURVETLIANCE LLOCATE	DINEP (41) HARBOR POLIUTION SURVETLIANCE (LOCATE	DIMOMPISSINGES SURVETLIANCE	O NOMP 54 DISASTER CONTHOS, SURVETLIANCE (LOCATE	O MSA 60 L'EBERG SURVETLIANCE	DIMSA [6] SEA TEMPERATURE SURVEYS	O MSA 16210CEAN SOUNDINGS PROGRAM	DIMSA 1631 STANDARD OCEANO. SECTIONS	OLMSA 164/BATHYTHEW/CGRAPH OBSERVATIONS	O MSA 65 TARBALL OBSERVATIONS	DIMSA [661 SURFACE CURRENT OBSERVATIONS	DIMSA 1671NATIONAL DATA BUOY PROCRAM	DIMSA 168 SURFACE MEATHER OBSERVATIONS	-	-	O PSS 179 VESSET, TRAFFIC SERVICES	-	OLSAR 191 SUKFACE SEAPCH	-	6 CVS (15) UNDERSEA PIPETINE INSPECTION		OTMER 142 INF'L POLIMITON SURVEILIANCE
SN																									19	9	19	0
NO.	1003	10331	1048	1650	1071	1077	1082	1088	1118	1127	1139	1144	1147	1148	1151	1154	11591	1163	1175	1189	218	1226	1245	1257	1283	1297	1321	1328

034: OBSERVE: STRUCTURAL INTEGRITY

EMERT	LLILLY
E	PIP
TIO	5 5
E INFORM	INTEGRITY INTEGRITY INTEGRITY INTEGRITY
FUNCTION STEESURVEITZANCE INFORMATION ELEMENT	GUESLEYE (334)STHUCTURAL INTECRITY OF FACILITY GESLEYE (334)STHUCTURAL INTEGRIT. GESLEYE (334)STHUCTURAL INTEGRITY OF PIPELINE (OBSERVE (334)STHUCTURAL INTEGRITY
SIE	2555
FUNCTION	CUSSLAVE CUSSLAVE CUSSLAVE CUSSLAVE
NO. (SN) PROGIPAL PROGRAM ACTIVITY FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	INSPECTION NSPECTION SSPECTION
INO. (SN) PROG PA PROGRAM ACTIVITY	1385 0 PSS 175 FACTLITY INSPECTION 2921 61 CVS 114 UNDERSEA STRUCTURE 12951 61 CVS 115 UNDERSEA PIPETAINE IN 12991 61 CVS 113 OFFSHORE PLATFORM II
PROGRAM	FACTLITY UNDERSEA UNDERSEA OPPSHORE
PA	13
SN PROC	01 PSS 61 CVS 61 CVS 61 CVS 61 CVS
NO.	185 292 295 295 299

037: OBSERVE: MOVEMENT OF OBJECT OF INTEREST

PUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	OBSERVE (337) FISHING VESSEL MOVEMENT	10371FISHING VESSEL NOVEMENT		(037) ICE MOVEMENT	1937 ICE MOVEMENT	1037 MOVEMENT OF POLIZITANT	1937 MOVEMENT OF POLILITANT	1337 INCVENENT OF AIRCHAFT OR MISSILE	1937 VESSEL NOVEMENT	1937 SUPPLIATIVE NOVEMENT	1937 TYAKBU MOVEMENT	1037 FLOOD, FIRE, FALLOUT, CAS CLOUD NOVEMENT	1037) ICEERG MOVEMENT	1937 SURFACE CURANIT VEIDCL IY	1937 SURFACE CURRENT VELOCITY	1937 INOVENENT OF CICUDS, SURFACE SMELLS	1037 VESSET, NOVEMENT	1937 ROVEMENT OF THEKAT	78 CONTWOL SELECTED VESSEL NUMIS LOBSERVE LOBTINOVEMENTS OF VESSELS INVOLVED	(037) VESSET, MOVINENTS	1937/ROMERRY OF PARCINIPATING/INTRUDING/ENDANGERED VESSELS AND SWIMMERS	(337) EXMERCIT OF CALLING UNIT	1937 MOVEMENT OF SEMECH CHARTE	103718/OVERBAL OF MINING MESSET OR FIGMFING PLANT	OFSERVE (237) MOVEMENT OF TEACHTONING ATRONAPT/VESSET/SUBMERSTBLE/SMIMMER	COSERVE (037) MOVEMENT OF SUPPLEMENTED	
		OBSERVE	OBSERVE	OESERVE	OPSERVE	OBSERVE	OBSEINE	OBSERVE	OBSERVE	OBSERVE	OBSERVE	ODSERVE	OFSERVE	OPSERVE	OBSERVE	OBSEME	OPSERVE	OPSERVE	10ESTRVE	OPERA	OPSCINE	OUSERVE	OESEME	OUSERVE	OFSERVE	OPSERVE	OF STREET
PROGRAM ACTIVITY	1037 0 ELT 20 FISHING VESSEL SURVEILLANCE	10521 OFELT (21)GEAR CONFLICT SURVETLIANCE	10631 01 ELT 1221 ANTI-SMUGGLING SURVETLIANCE	0110	(31) FLOOD (ICE JAM) SURVEILLANCE	OIMEP	1090) O'MEP (41) HARBOR POLLUFION SURVETLIANCE (OBSEIVE	O NOMP		[113] OIMOMPISSIASH SURVETLANCE		O MOMP 54 DISASTER CONTHOL SURVETTANCE		11491 OTMSA (63) STANDARD OCEANO, SECTIONS	O MSA		OLPSS (76) SPECIAL VESSEI, SURVEILIANCE	12101 01PSS 1771PORT AND WATERMAY SURVETLIANCE OBSERVE	O PSS	12291 01 PSS 1791 VESSET, TRAFFIC SERVICES	1238 O RBS (87) REGATTA SURVETLIANCE	[250] O[SAR [90]ALEHTING AND LOCATING SYSTEMS	1911 SURFACE SEARCH	288 6 ELT (23 UNDERSEA MINING SURVELT, ARKE		1324 DISAR 1921 UNDERWATER SEARCH	CHIEF THE INTERNATION SOUNDED

003: DETECT: MEDIUM SIZED VESSEL (40' - 150')

) VESSELS		K/ENDANGEKED VESSELS		
FUNCTION SIE SUKVEILLANCE INFORMATION ELEMENT	DETECT (003/MEDIUM-SIZED VESSELS USING WATERMAY DETECT (003/MEDIUM-SIZED VESSEL	D VESSEL D VPCSFL	D VESSEL	D VESSEL,	1003 MEDIUM-SIZED THREATENING VESSELS	003 MEDIUM-SIZED THREATENING/THREATENED VESSELS	1003 MEDIUM-SIZED VESSEL IN VTS SYSTEM	(2003) MEDIUM-SIZED PARTICIPATING/INTHUDING/ENDANGERED VESSELS	D VESSET.	D VESSEL
TION SIE SUKVEILLANC	CT (003/MEDIUM-SIZED VESSELA	CT (003 MEDIUM-SIZED VESSEL	-			_			CT 003 AEDIUM-SIZED VESSEL	DETECT (333/MEDIUM-SIZED VESSEL
	[10] BRIDGE TRAFFIC SURVEISIANCE (DETECT [20] FISHING VESSES SURVEISLANCE (DETECT	T SURVETLIANCE DETECT		EL SURVEILIANCE (DETECT	AND WATERIAY SURVEILIANCE DETECT	178 CONTROL SELECTED VESSET, MUMTS (DETECT	TO SERVICES DETECT	ELLIANCE DETECT	ICH (DETECT	-
NO. SN PROG PA PROGRAM ACTIVITY	O BA O ELT	OELT	O MOMP 51 ASUN SURVEIL	0 PSS 76 SPECIAL VESS	O PSS	0 PSS	O PSS		O SAR [91] SURFACE SEARCH	6 PSS 180 OFFSHORE ASSET PROTECTION
NO.	032	1045	101	1187	1201	(215	1224	1233	1252	1303

002: DETECT: LARGE VESSEL (150' +)

VESS	ING F
WATERWAY WATERWAY ESSELS HREATENED SYSTEM	OR FILMAT
INFORM S USING V ENING/TI	VESSEL
VESSEL VESSEL VESSEL VESSEL VESSEL VESSEL VESSEL VESSEL VESSEL VESSEL VESSEL VESSEL VESSEL VESSEL VESSEL	PHINING
FUNCTION STE SURVETGANCE INFORMATION ELEMENT DETECT 002 TAKGE VESSELS USING WATERWAY DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS DETECT 002 TAKGE VESSELS	1992 [JAHGE
FUNCTION DETECT	DETECT
NO. SN PROG PA PROGRAM ACTIVITY	[280] 6/ELT [23] UNDERSHA RINING SURVELLIANCE DETECT 1002 LALGE LATRING VESSEL OR FLOATING PLANT
027 031 055 100 1100 1186 1200 1214 2214	12801

029: IDENTIFY: TYPE

0.	NO. I SNI PROGI PA PROGRAM A	18	A:	PRO	GRAM	NO. SNI PROGI PAI PROGRAM ACTIVITY	7		(FUNCTION) SIE! SURVEILIANC? INFORMATION ELEMENT	SINI	IE SU	RVEIL	A	NI E	ORMA	TION	ELEME	K:	
0361	OFEL	11 12	201	FISH	ING V	ESSEL	036) O'ELT (20 FISHING VESSEL SURVETLIANCE 051) O'ELT (21)GEAR CONFLICT SURVETLIANCE	TANCE	IDENTIFY 029 TYPE OF VESSEL; TYPE OF FISHING VESSEL IDENTIFY 029 TYPE OF VESSEL; TYPE OF PISHING VESSEL	FYIO	29 TY	PE 0	VE VE	SEL;	TYPE	80	FISHIN	C VE	SSEL
0621	OFEL	T 12	22	AMI	-SMUG	GL.ING	O ELT 122 ANTI-SMUGGLING SURVETLIANCE	TANCE	IDENTIFY 329 VESSEL TYPE	FYID	29 VE	SSEL	TYP	1		;			
9721		13	301	ICE	SURVE	30 ICE SURVEIL'ANCE	ш		ILENTIFY 029 TYPE OF ICE	FYID	29 TY	30 3d	101	(1)					
0831		P 4	101	COAS	TAL P	OLLL	ON SURV	OTHER (40) COASTAL POLLUTION SURVEILLANCE IDENTIFY 329 TYPE OF POLLUTANT	I LUGUI	FYIO	29 TY	PE OF	2	LUTA	E.				
1690		P 4	17	HARB	OR PO	LIUTIC	N SUKVE	OIMEP (41) HARBOR POLIUTION SURVETLIANCE (IDENTIFY) 329 (1745 OF POLIUTANT	IDENTI	FYID	2917	77.04	8	LIVIA					
1.60		MP 5	109	AAN	SUHVE	O MOMP SO AAW SURVEIL FANCE	2		I IDENTIFY 029 TYPE OF ALACKAFT OR MISSILE	FYIO	29 TY	5 3	AL	CHAF	1 08	MISS	371		
1051		MP 5	511	ASUN	SURV	O MOMP 51 ASUM SURVETTANCE	GE 30		(IDENTIFY) 029 (VESSET, TYPE OK CIASS	FYLD	29 IVE	SSET,	TYP	S OK	CIASS				
1121		MP 5	52	ASM	SUKVE	O MONP 52 ASW SURVEIL ANCE	3		(IDENTIFY) 329 SUBMAKINE TYPE OR CLASS	FYID	29 SU	EMAKE	NE 7	YPE (けが	ASS			
1191		WP 5	531	MGFS	SURV	O MOMP 53 MIGES SURVETLIANCE	CE		(IDENTIFY) 329 (TARGET TYPE	FYLO	29 ITA	KGEL	TYP						
128	OING	MP 5	54	DISA	STEK	CONTRO	L SURVE	OFMOMP[54] DISASTER CONTROL SURVETILANCE IDENTIFY] 229 (TYPE OF LXPLOSIVE OR CHEMICAL AGENT	IDEMI	FYID	29 TY	10 3d	X	TSOL	/E OR	벙	MICAL	AGEN	-
1921	OI PS	SIT	19	SPEC	IAI. V	ESSEI,	SURVEIL	OLPSS (76) SPECIAL VESSEL SURVEILLANCE (IDENTIFY) 029 (TYPE OF VESSEL	IDENTI	FYLD	29 TY	PE OF	VES	SEL					
2091	SA IO	5 17	771	PORT	AND	WATERS.	AY SURV	0 PSS (77 PORT AND WATERARY SURVEILLANCE I LIENTIFY (329) TYPE OF THEAT	EL LENT	FYLD	29 TY	FE 04	1111	EAT					
228		5 17	16	VESS	EL TR	AFFIC	OFSS (79) VESSEL TRAFFIC SERVICES	S	I I DENTIFY (329 / TYPES OF VESSETS IN VIS SYSTEM	FYI	25 TY	D SA	FVE	SSEL	NI S	SIN	SYSTEM		
2471	OISA	R 19	106	ALER	FINC	AND I.C.	CATING	OFSAR 1907ALERFING AND LOCATING SYSTEMS FILENTIFY 329/TYPE OF EALTTER AND CALLING UNIT	I DEMI	FYIO	29 TY	5 3H	3	TTEK	AND	CALL	ING UN	II	
259	DISA	B 19	31	SURF	ACE S	DISAR (91) SURFACE SEARCH			I IDENTIFY (0.29) TYPE OF SEARCH OEJECT	FYIO	29 TY	F. OF	SE	一世光	COLUM	T			
287		T 12	231	UNIDE	PSEA	MINING	6 ETH (23 UNDERSEA MINING SURVETTANCE	L'IANCE	(IDENTIFY) 229 (TYPE OF MINING/MINING FACILITY	FYI	29 TY	HE OF	MIN	VING/	MININ	G FA	CILITY		
3121	8d 19	S 18	108	OFFS	HOKE	ASSET!	61PSS 183/OFFSHOKE ASSET! PROTECTION	NOL	(IDENTIFY) 329 (TYPE, OF THREAT	FYLO	29 17	4	11	-FAT					
123	6 SA	R 19	92	DAND	FA.ATE	323 6 SAR [92] UNDERWATER SEARCH	西		(IDENTIFY 029 TYPE OF SUBAEKS IBLE	FY	25 TY	FE CF	SUL	SHEKE	BLE				
1301	2 ME	P 4	12	INT.	I. POI.	LUTION	SURVEI	330) OIMEP (42) INT'L POLICITON SURVEILIANCE IDENTIFY (329) TYPE OF FOLICIAM	IDENTI	FYLD	29 TY	PE OF	8	TUTA	Į.				

047: OBSERVE: HAZARDOUS ACTIVITY

		MOBS						
N ELEMENT		VICTIMS OR !			MANEUVERS		ACTIVITIES.	
CE INPORMATIO	ACTIVITY	ACTIVITIES OF	ACTIVITY	ACTIVITIES	ACTIVITIES OR	ACTIVITY	CUNDITIONS OR	ACTIVITY
FUNCTION (SIE) SURVETLIANCE INFORMATION ELEMENT	147 HAZAKDOUS	247 HAZANDOUS	247 HAZARDOUS	247 HAZARDOUS	OBSERVE 1347 HAZARUOUS ACTIVITIES OR MANEUVERS	OESERVE (347) HAZARDOUS ACTIVITY	DESERVE 347 HAZARICUS CONDITIONS OR ACTIVITIES	047 I HAZANDOUS
FUNCTION	OBSERVE	OPSERVE	E OBSEIVE	OPSERVE	OBSERVE	OPSERVE	OESERVE	OBSERVE
INO. ISNI PROGIPAL PROGRAM ACTIVITY	1054 OFELT (21) GEAR CONFLICT SURVEILIANCE (OBSERVE (047) HAZARDOUS ACTIVITY	1301 DIKOMPISATURE CONTROL SURVELLIANCE (OBSERVE 1947) HAZARIGUS ACTIVITIES OF VICTINS OR MOBS	[2]3] [5] PSS 177] PORT AND MATER-AY SURVEILLANCE OBSERVE [347] HAZAKDOUS ACTIVITY	[222] OLPSS [78] CANTHOL SELECTED VESSEL, MWITS [OBSERVE 947] HAZARLOUS ACTIVITIES	(231) 31PSS (79]VESSEL TRAFFIC SERVICES	12391 DIRBS (87) RECATTA SURVETLIANCE	278 0 PSS (75) FACILITY INSPECTION	[290] 6 ELT [23] UNDERSEA MINING SURVELLIANCE [OBSERVE 047 HAZARDOUS ACTIVITY
10. SN	1541 018	301 211	131 911	221 011	311 311	391 018	781 018	119 106
=	- =	=	-	-	- 2	-	-	-

024: LOCATE: ALTITUDE OR DEPTH

FUNCTION SIE SURVEIL/ANCE INFORMATION ELEMENT	LOCATE (224/ALTITUDE OF AIRCRAFT/MISSILE (224/DEPTH OF SUBMARINE	1024/OBSERVED DEPTH		(224) VERTICAL POSITION OF DEFECT IN THE STRUCTURE	-	1024 CEPTH OF SKITMER/SUBMERSTBLE	1024 CEPTH OF SUBNEKSIBLE
FUNCTI	LOCATE	LOCATE	LOCATE	TOCATE	I.D.CATE	LOCATE	LOCATE
INO, ISNI PROGI PAI, PROGRAM ACTIVITY	095) OLWOMP SOLAM SURVELLIANCE 110) OLWOMP S2 ASM SURVELLIANCE	1117 O MOND 53 NGFS SURVETGRANCE 146 O MSA 162 OCFAN SOUNDINGS PROCRAM	206) 0 PSS 177 PORT AND WATERWAY SURVEILLANCE LOCATE	284) 6[ELT [23]UNDERSEA MINING SURVEILLANCE LOCATE 294] 6[2VS [24]UNDERSEA STRUCTURE INSPECTION (LOCATE	3011 61CVS (13) OFFICIONE PLATFORM INSPECTION (12) CATE	309 6 PSS (80) OFFSHORE ASSET PROTECTION	1320 6 SAR 192 UNDERWATER SEARCH
8	113	111	120	128	30	130	132

026: IDENTIFY: NAME OR IDENTIFYING NUMBER

FUNCTION SIE SURVEILLANCE IN DAMATION ELEMENT	I IDENTIFY 026 NUMBER OF BOOY	IDENTIFY 1026 INDREER OF PEACON	IDEATIFY 326 NAME OF NUMBER OF FISHING VESSEL	(IDENTIFY) 226/FISHING VESSLI, NAME OR NUMBER; MARKER NUMBER	IDENTIFY 026 NAME OF NUMBER OF SNUGGLING VESSEL	IDENTIFY 026 DOOY NUMBER	(ILLENTIFY (226 NAME OR NUMBER OF SPECIAL INTEREST VESSEL	AND WATEKWAY SURVETLIANCE! IDENTIFY! 326 I VESSET, NAME OR NUMBER	78] CONTROT, SETECTED VESSET, MAYES IDENTIFY 326 INME OR NUMBER OF VESSETS, INVOLVED	(IDENTIFY) 026 (NAMES ON NUMBERS OF VESSELS IN VIS SYSTEM	ILDENTIFY; 326 NAVE OR MARER OF INTRUDING/ENLANGERED VESSET.	93/ALERTING AND FOZATING SYSTEMS (LEGMT1FY) 226/NAME OF NUMBER OF CALLING UNIT	(IDENTIFY) 226 INMAE OK NUMBER OF STARCH OBJECT	THENTIFY 1025 HAMF OR NUMBER OF MINING VESSLY, OR FIDATING PLANT	TIDENTIFY; 226; MARE OF AUTHER OF THERMINALNG AINCHAFT/VESSET/SUBMERSIBLE	IDENTIFY: 226; NAME OF NUMBER OF SUPPLEASIBLE
NO. SN PROG PA PROGRAM ACTIVITY	IN I I BUOY SURVEIT, IANCE	IN 2 BEACON SURVEIL ANCE	ILT (20) FISHING VESSET, SURVETLIANCE	IT 21 GEAR CONFILCT SURVEILIANCE	-	ISA 167 NATIONAL DATA EUOY PROCRAM	176 SPECIAL VESSET, SURVETLIANCE	177 PORT	-	SS (79) VESSET, TRAFFIC SERVICES	UBS (87) RECATTA SURVEILIANCE	_	191 SURFACE SEARCH	(23) UNDERSEA MINING SURVEITIANCE	SS (80) OFFSHOFE ASSET PROTECTION	SAR 1921 UNDERGATER SEARCH
SNIP	41 OIA	BI CIAN	41 OIEUT	9! O'ELT	of oferr	41 DIMSA	SSA 10 10	554 10 12	SS4 0 16	71 01PSS	71 01 RBS	61 DISAR	81 OLSAR	5! 6/ELT	SS419 10	21 6 SAR
N	1004	100	034	1049	901	1164	130	1207	239	1227	1237	246	258	285	133	13221

THIS PAGE IS BEST QUALITY PRACTIONAL. FROM COPY PURHISHED TO DDG

005: DETECT: MAN IN WATER, NON-METALLIC BUOY, FISH TRAP MAKKER, GROWLER, DITCHED AIRCRAFT

FUNCTION SIE SURVEILIANCE INPORMATION ELEMENT	DETECT (005) NON-METALLIC BUDY DETECT (005) FISH TRAP MARKER DETECT (005) FISH TRAP MARKER DETECT (005) PERSONNEL, TRREATS: SURFACE DETECT (005) ENDARCHED SWIMMERS DETECT (005) MAN IN WATER, DITCHED AIRCRAFT DETECT (005) SURFACE SWIMMER
	ANCE (005)N SURVEILLANCE (DETECT (005)F ILLANCE (DETECT (005)G MARY SURVEILLANCE (DETECT (005)F ILLANCE (DETECT (005)F
INO. ISNI PROCIPAL PROCRAM ACTIVITY	002 0 AN 1 BUOY SURVETLIANCE DETECT 047 0 ELT

046: OBSERVE: HOSTILE ACTIVITY

FUNCTION SIE SURVEILLANCE INPORMATION ELEMENT	ALECRAFT ACTIVITY VESSE, ACTIVITY SUBMALINE ACTIVITY ACTIVITY OF TARGET ACTIVITY ACTIVITY ACTIVITY ACTIVITY
FUNCTION SIE SURVEIL	OBSERVE 1946 HOSTILE AIRCRAFT ACTIVITY OBSERVE 1946 HOSTILE SUBMALINE ACTIVITY OBSERVE 1946 HOSTILE SUBMALINE ACTIVITY OBSERVE 1946 HOSTILE ACTIVITY OF TARGET OBSERVE 1946 HOSTILE ACTIVITY OF SUBMALINE ACTIVITY OF SUBMALINE ACTIVITY OBSERVE 1946 HOSTILE ALTOMATIVESEL/SUB 1946 HOSTILE AIRCRAFT/VESSEL/SUB
NO. ISN PROGIPAL PROCEAM ACTIVITY	099 0 MOMP 50 AAW SURVETLIANCE 1045ERVE 1046 HOSTILE ATRCHAFT ACTIVITY 1107 0 MOMP 52 ASW SURVETLIANCE 1045ERVE 1046 HOSTILE SURMALINE ACTIVITY 1122 0 MOMP 52 ASW SURVETLIANCE 1045ERVE 1046 HOSTILE ACTIVITY OF TARGET 1046 0 PSS 706 SPECIAL VESSEL SURVETLIANCE 1046 HOSTILE ACTIVITY OF TARGET 1046 0 PSS 706 SPECIAL VESSEL SURVETLIANCE 1046 HOSTILE ACTIVITY 1121 0 PSS 100 OFFENCHE ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1122 0 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1123 0 PSS 100 OFFENCHE ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1124 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1125 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1126 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1127 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1228 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1229 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1220 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1220 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1220 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1221 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1222 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1223 0 MOMP 52 ASSEL PROTECTION 1046 HOSTILE ATRCHAFT/VESSEL/SUBMERSIBLE ACTIVITY 1224 0 MOMP 52 M

033: IDENTIFY: CHARACTERISTIC CODE

[FUNCTION] STE SURVET LIANCE INFORMATION ELEMENT	OLS OLAN 3 SURVELLIANCE OF LIGHTS ILENTIFY OLAN CHEKISTIC CODE OF HADTO BEACON SIGNAL OLAN 4 FADTO BEACON SURVELLIANCE ILENTIFY OLAN CHEKISTIC CODE OF HADTO BEACON SIGNAL OLAN CHEKISTIC CODE OF POC SIGNAL OLAN CHEKISTIC CODE OF POC SIGNAL OLAN CHEKISTIC CODE OF POC SIGNAL OLAN CHEKISTIC CODE OF POC SIGNAL OLAN CHEKISTIC CODE OF POC SIGNAL OLAN CHEKISTIC CODE OF POC SIGNAL OLAN CHEKISTIC CODE OF POCOTOR CHEKISTIC CODE OF POC SIGNAL OLAN CHEKISTIC CODE OF POCOTOR CHEKISTIC CODE OF POCOTOR CHEKISTIC CODE OF PACENTING/LOS OF PACENT
SI PAI PROGRAM ACTIVITY	10151 01AN 31 SURVETCIANCE OF LIGHTS 1021 01AN 41 RADTO BEACK SURVETLIANCE 1024 01AN 51 FOG STGALL, SUPPLIFIANCE 1166 01 RSA 67 INSTITUNCY, DATA BUDY PACCRAM 12491 01 SAR 97 IALERTING AND TOCATING SYSTEMS

013: DETECT: LIQUID POLLUTANT

TON ELEMENT			PELINE	
FUNCTION SIE SURVEILLANCE INPORMATION ELPHENT	POLIUTANT	POLLUTANT	LEAKAGE FROM PI	POLLUTANTS
N STE SURVETL	1913 LICUID I	divi, letol	DIST. ICUID	1013/LICUID 1
FUNCTIO	UNVETLIANCE DETECT	EVETT ANCE DETECT	NSPECTION IDETECT	VETTANCE (DETECT
IND. (SN) PROG PAI PROCRAM ACTIVITY	1081 DIMER (40) COASTAL POLITITION SURVEILLANCE DETECT (013) LIQUID POLITIANT	087] 0/MEP (41/HARBOR POLIUTION SURVEIL: ANCE (DETECT (0)3/: (CUID POLIUTANT	1298) 6/CVS (15) UNDERSEA PIPELINE INSPECTION (DETECT (2)3/1.1/2010 LEAKAGE FROM PIPELINE	1328 JOHNEP (42) INT'L POLIZITION SURVETIZANCE (DETECT (013) LICUID POLIZIANTS
INO. ISN PROGIP	1081 01MEP 14	10871 01NEP 14	1298! 6 CVS 1	1328 0 MEP 4.

019: DETECT: SOUND EMISSION IN AIR

FINCTION SIE SURVEILLANCE INFORMATION ELEMENT	023 0 AN 5 FOG SIGNAL SURVEILLANCE DEFECT 019 FOG SIGNAL 100 1
FUNCTIO	DETECT DETECT DETECT
INO. [SNI PROGIEM] PROGRAM ACTIVITY FUNCTION SIEISURVEILLANCE INFORMATION ELEMENT	023 0 AN 5 FG SIGNAL SURVELLIANCE 242 0 SAR 90 ALEKTING AND LOCATING SYSTEMS 341 0 SAR 90 ALEKTING AND LOCATING SYSTEMS

030: IDENTIFY: COLOR

EMENT	
FUNCTION STELSUAVELLIANCE INFORMATION ELEMENT	OF ELAZON OF ELAZON OF TAIGHT OF SEARCH GENEZY
FUNCTION STELSUAVELLIANCE INFORMATION ELEMENT	IDENTIFY 339 COLOR OF BUOY IDENTIFY 339 COLOR OF BLACON IDENTIFY 339 COLOR OF LIGHT IDENTIFY 339 COLOR OF SEARCH GENERAL
INO. ISNI PROGIPAL PROGRAM ACTIVITY	1005 OTAN LIBUOY SURVELLIANCE - 1009 OTAN ZIBEACON SURVELLIANCE 1014 OTAN ZISURVELTIANCE OF LIGHTS 1260 OTSAR 191 SUKFACE SEARCH
SN PPOG	2051 01 AN 2091 01 AN 2141 01 AN 2601 01 SAR
NO.	005 009 014 260

018: DETECT: ELECTROMAGNETIC EMISSION: LIGHT (400-750 THz) (0.75-0.4 micron)

FUNCTION SIE SURVEITANCE THROPATION ELEMENT		DETECT (318/PAJOR OR MINOR LIGHT OR LIGHTED RUOY	(241) OSAR (90)ALEKTING AND LOCATING SYSTEMS (DETECT: (218), JIGHT EATSSITYS FROM ALEKTING/LOCATING DEVICE	(340) 01SAR (90)ALENTING AND LOCATING SYSTEMS (DETECT (1)BIALERITING/LOCATING LIGHT ENISSIONS
FUNCTIO		DETECT	DETECT	DETECT
INO. ISNI PHOCI PAI PACCRAM ACTIVITY		(013) O'AN 3/SURVETTIANCE OF LIGHTS	IC AND LOCATING SYSTEMS	IG AND INCALLING SYSTEMS
PAI PHOGRA		3 SURVEIT	90 ALEKTIN	90 ALERTIN
SN PROC		OAN	SAR !	I SYR !
NO.	-	1013	1241	1340

022: LOCATE: RANGE OR BEARING

INISTE SURVETTIANCE INFORMATION ELEMENT	[243] OSAR [90]ALERTING AND LOCATING SYSTEMS [LOCATE 022]ENLIGH-TG-VESSEL MAGE 1915UNDERSER 100]ALERTING AND LOCATING SYSTEMS 1022 ENNOE OR BEARING OF EMITTER 102 ENNOE OR BEARING OF SEARCH OBJECT 1296 6 CVS 15 UNDERSER FIFELINE INSPECTION 100AIE 022 HORIZONTAL FOSTITON OF DEFECT IN THE PIPELINE
NO. SNI PROGRAM ACTIVITY FUNCTION STEI SURVETTANCE INFORMATION ELDRENT	[243] OLSAR [90] ALERTING AND LOCATING SYSTEMS [1002/1E 022] RANGE OR BLARING OF EMITTER [255] OLSAR [91] SUFFACE SEARCH SYSTEMS [1002/1E 022] RANGE OR BLARING OF EMITTER [206] 6 [CVS 1.5] UNDERSEA PIPELINE INSPECTION [1002/1E 022] HORIZONTAL POSITION OF DEPECT

038: OBSERVE: TRANSMISSION TIME SCHEDULE

FUNCTION STEE SURVETLIANCE INFORMATION ELEMENT	OBSERVE (038/THANSMISSION TIME SCHEDULE OF LIGHT BRISSIONS (OBSERVE (038/THANSMISSION TIME SCHEDULE OF HADIO BEACON SIGNAL (OBSERVE (038/THANSMISSION TIME SCHEDULE OF FOG SIGNAL (OBSERVE (038/DATA FLOY THANSMISSION TIME SCHEDULE
INO. ISNI PROGIPAL PROGRAM ACTIVITY [FUNCTION] SIEJ SURVELLIANCE INFORMATION ELEMENT [0] 81 0 Jan 2 STRINGT	>

021: DETECT: NUCLEAR RADIATION: ALPHA AND BETA PARTICLES, GAMMA RAYS

0 118	EMENT	
	NO. ISNI PHOGIPAL PROCKAN ACTIVITY FUNCTION SIE/SURVEIL ANDE INPONATION ELEMENT	NO I ION
	JANCE 1	KADIAT KADIAT KADIAT KADIAT
	SURVEIT	NUCLEAR NUCLEAR NUCLEAR NUCLEAR NUCLEAR
	IONISTE	10201
	CMD41	Caraol Caraol Caraol Caraol Caraol
		TITIANCE FANCE STICTANCE STICTANCE STANCE
	77	1286 OF PASSIBLE CANTROL SURVETMANCE DETECT (22) INDUCEAR MADIATION 1286 OF SPECIAL VESSEL SURVETMANCE DETECT (22) INDUCEAR PADIATION 1276 GIMEP (41) BARBOR POLICITOR SURVETMANCE DETECT (22) INDUCEAR PADIATION 1275 GIMEP (41) BARBOR POLICITOR SURVETMANCE DETECT (22) INDUCEAR PADIATION 1334 GIMEP (42) INFIT, POLICITOR SURVETMANCE DETECT (22) INCLEAR PADIATION
	ACTIVI	VESSET, VESSET, VOLUME OCTUME STANTON
	РКОСКА	PECTAL, VASTAL, ARBOR P
	INO, SNI PHOGIPA, PHOCHAN ACTIVITY	25 76 35 76 35 76 35 76 35 76 35 76 35 35 35 35 35 35 35 3
	SNIP	51 61 ME
	MI C	33.727

008: DETECT: DIVER (UNDERWATER SWIMMER)

INO. SNI PROGIPAL PHOCHAM ACTIVITY FURCTIONISTHISURVELLIANCE INPOMATION ELEMENT		1306 61755 18310 PORTING AND ARTICLES OF THE DETECT (036) PERSONEL THREATS: STREET PAGE	ONE PEOPLE LICENTION DETECT 008 UNDERWATER STRANGED
INO. ISNI PROGIPAL PHOCHAM ACTIVITY	12041 0:psc (77) mon mo	3061 61PSS 18010PPFHOPP	TUNIO I SELECTION OF THE SELECTION OF TH

015: DETECT: ELECTROMAGNETIC EMISSION: RADIO (10kHz - 30 GHz)

FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	DETECT 015 RADIO DEACON SIGNAL	(DELECT: (0)5/BUOY TELEMETRY TRANSMISSION	(240) OSAR (90) ALEKTING AND TOCATING SYSTEMS (DETECT (915) FADIO TRANSMISSIONS FROM ALEKTING/LOCATING DEVICE	339 0 SAR 90 ALEKTING AND LOCATING SYSTEMS DETECT 015 ALEKTING/LOCATING RADIO TRANSMISSIONS
FUNCTIO	DETECT	DETECT	DETECT	DETECT
INO. SNIPROGIPAL PROGRAM ACTIVITY	(019) O'AN I 4 RADIO BEACON SURVETLIANCE	[162] O'MSA 67 NATIONAL DATA BUOY PROGRAM	0 SAR 190 ALERTING AND LOCATING SYSTEMS	DISAR 190 ALEKTING AND LOCATING SYSTEMS
8	1019	162	240	1339

027: IDENTIFY: FLAG (US OR FOREIGN)

IDENTIFE IDE	IDENTIFY 227 NATIONALITY OF THEFATEIING AIRCHAFT/VESSET/SUBMERSIBLE	UNDERSEA MINING SURVELLIANCE IDENTIFY 227 WATTONALITY OF MINING VESSEL OR FIGHTING PLANT	[78] CONTROL SELECTED VESSEL NUMTS (IDENTIFY) 227 (NATIONALITIES (FLAGS) OF VESSELS INVOLVED	PORT AND WATERWAY SURVETLIFANCE! LIGHTIFY 027 (NATIONALITY (FLAG) OF VESSEL	IDENTIFY 027 NATIONALITY (FLAG) OF SPECIAL INTEREST VESSEL	IDENTIFY 027 NATIONALITY (FLAG) OF SMUGGLING VESSEL	IDENTIFY 027 NATIONALITY (FIAG) OF FISHING VESSEL	IDENTIFY 027 NATIONALITY (FLAG) OF FISHING VESSEL	PROCKAM ACTIVITY	
INO, SNI PROGI PA PROGRAM ACTIVITY 1035 0 ELT 20 FISHING VESSEL, SURVETLIANCE 1050 0 ETT 21 GEAR CONFLICT SURVETLIANCE 1061 0 ETT 22 ANTH-SMUGGLING SURVETLIANCE 1191 0 PSS 76 SPECIAL, VESSEL SURVETLIANCE 1208 0 PSS 77 PORT AND WATERWAY SURVETLIANCE 1200 0 PSS 77 PORT AND WATERWAY SURVETLIANCE 1200 0 PSS 78 CONTROL SELECTED VESSEL NUMBES 1266 6 ELT 23 UNDERSEA MINING SURVETLIANCE 131 0 PSS 180 OFFSERORE ASSET PROTECTION	6 PSS 80	6 ELT [23]	0 PSS	O PSS	O PSS 76 SPECIAL VESSEL SURVETLIANCE	OELT	O ELT	OFELT		

042: OBSERVE: SUSPICIOUS ACTIVITY: HOVERING

NFORMATION ELEVENT	GESERVE 042 SUSFICIOUS ACTIVITY (HOVERING) GESERVE 042 SUSFICIOUS ACTIVITY (HOVERING) ELGESERVE 042 SUSFICIOUS ACTIVITY GESERVE 042 SUSFICIOUS AIRCRAFT/VESSEL/SUBNEKSIBLE ACTIVITY
FUNCTION SIE SURVEILGEANCE INFORMATION ELEMENT	SERVE (042/SUSFICTOUS ACT) SERVE (042/SUSFICTOUS ACT) SERVE (042/SUSFICTOUS ACT) SERVE (042/SUSFICTOUS ATIN)
	ANC
NO. SN PROG PA PROGRAM ACTIVITY	064 0 ELT 122 ANTI-SMUGGLING SURVE LLIANG 194 0 PSS 76 SPECIAL VESSEL SURVE LLIANG 1211 0 PSS 77 PORT AND WATERWAY SURVE LLIANG 1314 6 PSS 80 05 FSHORE ASSET PROTECTION

035: OBSERVE: AUDIBLE/VISIBLE/RADAR RANGE

	JE BEACON		
NO. SNIPROCIPAL PROGRAM ACTIVITY	(CESERVE (035)VISIBLE OR HALPA DETECTION NAMES OF BEACON	OBSERVE (035) VISIBLE MANGE OF PCG SIGNAL	CESERVE (035) FALL OF SHOT
NO. ISNI PROGIPAL PROGRAM ACTIVITY	10111 01AN 2!BEACON SURVEITIANCE	10251 01AN SIPORVELLIANCE OF LIGHTS	[120] O MOMP 53 NGFS SURVETLIANCE

007: DETECT: SOLID POLLUTANT, TARBALL

ON ELEM	
FUNCTION SIE SURVEILIANCE INPORMATION ELDMENT	ALIATANTS.
FUNCTION STEE SURVETLIAN	10071SOLID H
I FUNCTIO I DETECTI JANCE DETECT ANCE DETECTI NCE DETECTI	NCE IDENECT
NO. SN PROG PA PROCRAM ACTIVITY FUNCTION STE SURVETLIANCE INPORMATION 153 0 MSA 65 TARBALL OBSERVATIONS DETECT 007 TARBALL 100 1	1327 6 MEP (42) INT'L POLILITION SURVETLIANCE (DELECT (997) SOLID FOLLITANTS
1153 CIMSA 16. 273 6 MEP 14. 2231 6 ELT 12.	13271 6 NEP 4.

001: DETECT: AIRBORNE AIRCRAFT, MISSILE, AIRSHIP

FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	DETECT (02) AIRCRAFT, MISSILE DETECT (03) APPROACHING AIRCRAFT
FUNCTION	DETECT
NO. SNI PROGIPAL PROGRAM ACTIVITY FUNCTION SIE SUNVEILLANCE INFORMATION ELEMENT	1993 01MOMP 50 AAW SURVEILLANCE 302 61PSS 80 0FFSHOKE ASSET PROTECTION

028: IDENTIFY: FRIEND OR FOE

INO. SNI PROGLAM PROGRAM ACTIVITY FUNCTION SIE SURVEILLANCE INPORMATION ELEMENT	IDENTIFY 028 CHARACTER OF AIRCRAFT (FRIEND OR FOE) IDENTIFY 028 VESSEL CHARACTER (FRIEND OR FOE) IDENTIFY 028 SULFARINE CHARACTER (FRIEND OR FOE)
INO. SNI PROGIPAL PROGRAM ACTIVITY	1996 OFMOMPESOFAN SURVETLIANCE 1994 OFMOMPESIFASUN SURVETLIANCE 1111 OFMOMPESSEASW SURVETLIANCE

009: DETECT: SMALL SUBMERGED SUBMERSIBLE, MINE, SUNKEN VESSEL

057: OBSERVE: AREA COVERRY BY OBJECT(S) OF INTEREST

							POUND			
ELEMEN					,		BALLS			
OFWATION	101	1CE	HOLLLATANI	HULLINIAN	I LISASTER	HEA	WHICH TAK	(PERCENT)	EFFILIENT	FCLIDIANI
FUNCTION STEESURVETLIANCE INFORMATION ELEMENT	OBSERVE 057 AKEA COVERED BY ICE	COVERED BY	COVERED BY	SOVERED BY	AFFECTED BY	OBSERVE (057) ICEBERG HAZARD ANEA	OBSERVE (057) SIZE OF AREA IN WHICH TAKEALLS FOUND	TORSERVE (057)CTOUR CONFINGE (PERCENT)	WILKEL BY	COVERED BY
SIESURVE	OBSERVE 1057 AREA COVERED E	1057 AKEA	1057 AKEA	1057 AMEA	1057 AKEA	1057 ICEBE	1057 SIZE	10571CTOU	1057 AREA	1057 AKEA
FUNCTION	OBSERVE	OBSERVE	ELGESERVE	CESERVE	CESENVE	CESENVE	OESEKVE	OPSERVE	OBSERVE	OESERVE
		0801 0110 131/FICOD (TCE JAM) SURVETLIANCE (OBSERVE 1057/AMEA COVERED BY ICE	086 O MEP 140 COASTAL POLILITION SURVEILIANCE CESERVE 1057 AREA COVERED BY POLILITANT	092] 0]MEP [4] HARBOR FOLLITION SURVEILIANCE [CESERVE [057]AREA SOVERED EY KLILLEANT	[132] O!MOMP[54]DISASTER CONTHOL SURVEILLANCE (CESENVE 057]AREA AFFECTED BY DISASTER	ANCE	TONS	1771 CIMSA 1681 SURFACE MEATHER CESEMVATIONS	291) 6/ELT (23)UNDERSEA MINING SURVEILLANCE (OBSERVE (057)AREA COVERED BY EFFILIENT	1333] OFMEP [42] INT L FOLLUTION SURVEILIANCE FORSERVE [357] AREA COVERLD BY POLLUTANT
INO. ISNI PROGI PAI PROGRAM ACTIVITY	075 010 301CE SURVETLIANCE	(ICE JAM)	AL POLIUFIC	S FOLLUTION	TER CONTROL	1142! OIMSA 160! ICEBERG SURVEILIANCE	11571 OLMSA 165/TAMBALL CRSERVATIONS	CE WEATHER	SEA MINING	HOLLLITTON
CIPAL PROC	075 0 10 30 ICE SURVEIL	131 FLOOD	140 COAST	141 HAFBC	PI SAIDISAS	160 I CEBE	165 TAKEA	68 SURFA	123 UNDER	42 INI "I
SN PRO	0110	0110	OIMEP	OIMEP	O MOM	OIMSA	OIMSA	OIMSA	FILT I	OIMEP
N.	1075	080	980	1092	1132	1142	1157	1177	1291	1333

053: OBSERVE: CONTRABAND: WEAPONS AND MUNITIONS

FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	19681 OFELT 122 ANTI-SMUGGLING SURVETIZANCE (OBSERVE 1953) CONTRABAND (WEAFARS AND MUNITIONS)	(198) OFES (76)SPECIAL VESSEL SURVEILLANCE (06SERVE (053) COMINAMED REARCHS AND MUNITIONS	(CESEAVE 1053) WEARCHS/MUNITIONS CARKLED BY TERRETENING AIRCHAPT/VESSEL/SUBMEKSIBIE
FUNCTION.	CESERVE	OBSERVE	CESENVE
INO. SNI PROGIPAL PROGRAM ACTIVITY FUNCTION SIE SURVEILLANCE INFORMATION ELDENT	ILT 122 ANTI-SMUGGLING SURVEILLANCE	SES (76) SPECIAL VESSEL SURVEILIANCE	(316) 6/PSS (80) OFFSHORE ASSET PROTECTION
NO. ISN	10681 OFE	11981 OFF	13161 6 F

014: DETECT: GASEOUS POLLUTANT

ENT				
TIVITY (FUNCTION STELSURVELLIANCE INFORMATION ELEMENT	CHEMICAL AGENT	HOLIUIANIS	FOLIUTAVIS	KULUIVANIS
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IND. ISNI PHOGIPAL PHOCKAM ACTIVITY	1124 O MONP SALDISASTER CONTROL SUIVELIZANCE LICENSET 1314 GASECUS CHEMICAL AGENT	[269] 6[MEP [40] CONSTAL POLICITION SURVEILIANCE [DETECT: [014] CASECUS MALADIANIS	1274 6/MEP (41) HAMBOR POLIUTION SURVEILLANCE (DETECT) 14 (CASEOUS FOLIUTANIS	13351 6IMEP 1421 INT'L POLITITION SURVEILLANCE IDETECT 1014 CASEGUS POLITITIANIS
SNI PHOG	O MOMP	6 MEP 14	6 MEP	6 MEP
8	11241	15691	12741	13351

020: DETECT: SOUND EMISSION IN WATER

	*
	1279) OISAR (90)ALEKTING AND LOCATING SYSTEMS (DETECT 1020)ALEKTING/LOCATING WATERBOANE SOUND EMISSIONS (318) 61SAR (92)UNDERWATER SEARCH (DETECT 1020)SOUND EMISSION IN WATER
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13	HAE
3	TENBY LEVE
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31	0.0
FUNCTION SIE SCHWEITANCE INFORMATION ELEMENT	DETECT (020) ALEKTING/LOCATING WATEN (DETECT (020) SOUND EMISSION IN WATEN
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PROC	LEKI
M	901A
198	AR -
SN	618
INO. ISNI PROGIPAL PROCHAM ACTIVITY	1279) OISAR 1901ALERTING AND LOCATION 13181 61SAR 1921UNDERWATER SEARCH
	-

031: IDENTIFY: SHAPE

INO. (SNI PROCEDA) PROCRAM ACTIVITY FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	(IDENTIFY) 331 SHAPE OF BUOY (IDENTIFY) 331 SHAPE OF BLACON (IDENTIFY) 331 SHAPE (APPLAJANCE) OF SEANCH CAJECT
(NO. SN PROG PA PROGRAM ACTIVITY	1006 01an 11BUOY SURVETLIANCE 1010 01an 21BEACON SURVETLIANCE 1261 01SAR 1911SURFACE SEARCH
NI.	266

036: OBSERVE: VISIBILITY ARCS

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	COSSERVE (036/VISIBILITY ARCS OF BEACON, IF APPLICABLE (COSSERVE (036/VISIBILITY ARCS OF LIGHT
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FUNCTION SIE SURVEILLANCE INFORMATION ELPHENT	COSSERVE (036/VISTBILLITY ARCS OF LIGHT (COSSERVE (036/VISTBILLITY ARCS OF LIGHT
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PK	BEAC
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SN	OLAN
INO. ISNI PROGIPAL PROGRAM ACTIVITY	10121 01AN 2/BEACON SURVETLIANCE

060: OBSERVE: PROFILES: DEPTH vs TEMPERATURE

NO. (SN) PROGIPAL PROGRAM CONTRACTOR (FUNCTION SIE) SURVEILLANCE INFORMATION ELEMENT	11521 CHMSA 164 BATHYTHERWOGRAPH CESERVATIONS (CESERVE 10601 PRESSURE (CEPTH) VEKSUS TEMPERATURE PROFILE	(271) 6/MEP (40/COASTAL POLLUTION SURVETLIANCE/OESERVE (360/ENVIHONMENTAL SEA TEMPERATURE CHANGES	1276/ 6/MEP (41/HARBOR FOLLITTION SURVEILIANCE FORSERVE FORM) ENVIRONMENTAL, SLA TEMPERATURE CHANGES	1336 6 MEP 142 INT'L POLIVION SURVEILLANCE 1065EAVE 1067 ENVINGAMENIAL SEA TEMPERATURE CHANGES
FUNCTI	CREEK	CESERV	OESEM	OBSERV
INO. ISNI PROCIPAL PROCESSOR. CONTUITY	64 BATHYTHERMOGRAPH OBSERVATIONS	1401 COASTAT, POLILITION SURVETLIANCE!	(41) HARBOR POLICITION SURVEILLANCE	42 INT'L POLIUFION SURVEILIANCE
SN PRO	OIMSA	6 MEP	61MEP	6 MEP
	1152	(2711	12761	336

056: OBSERVE: SIZE OF OBJECT

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FUNCTION STEISURVEILLANCE INFORMATION ELEMENT	EXPLOSION, 1			SYSTEM	
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SIE SURVE	1326 S12E	CESERVE 1856 STZE OF ICEBERG	URSERVE 10561STZE OF TAMEALIS	CESERVE (056) SIZES OF V'SSELS IN VIS SYSTEM	LOBSERVE 1050 SIZE OF SEARCH CENECT
FUNCTION	COSERVE	CESERVE	OBSERVE	GESERVE	OBSERVE
INO. ISNI PROGIPAL PROGRAM ACTIVITY	1131) OTHORPISATORSSTER CONTROL SURVEILLANCE (OFFERVE 1356)512E OF NUCLEAR BURST, EXPLOSION, ETC.	141 0 MSA 160 I CEEERG SURVETIZANCE	11561 PIMSA 1651TARBALL CESEKVATIONS	2321 01PSS 1791VESSEL, TRAFFIC SERVICES	2631 DISAR 1911 SURPACE SEARCH
8	1133	1141	1356	(232	1263

061: OBSERVE: PROFILES: DEPTH vs SALINITY

N ELEMENT	CHANGES
INPORMATIO	SALINITY SALINITY SALINITY
INO. ISNI PROGIPAL PROGRAM ACTIVITY	272 6 MEP 40 COASTAL POLLUTION SURVEILLANCE OBSERVE 061 ENVIRONMENTAL SALINITY CHANGES 277 6 MEP 41 HARBGR FOLLUTION SURVEILLANCE OBSERVE 061 ENVIRONMENTAL SALINITY CHANGES 337 6 MEP 421 INT'L FOLLUTION SURVEILLANCE CESERVE 061 ENVIRONMENTAL SALINITY CHANGES
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INO. ISNI PROGIPAL PROGRAM ACTIVITY	POLIUTION OLIUTION LIUTION
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PA	411
N PRO	6 MEP 6 MEP 6 MEP
NO.	272 277 1775 3337

068: OBSERVE: NATURE OF DISTRESS: AFIRE

NO. SN PROG PA PROGRAM ACTIVITY FUNCTION SIE SURVEILIANCE INFORMATION ELEMENT 135 0 MOMP 54 DISASTER CONTROL SURVEILIANCE CESERVE CODE AND CONTROL SURVEILIANCE CESERVE CODE AND CONTROL SURVEILIANCE CESERVE CODE AND CONTROL SURVEILIANCE CESERVE CODE AND CONTROL SURVEILIANCE CESERVE CODE AND CONTROL SURVEILIANCE CESERVE CODE AND CONTROL SURVEILIANCE CESERVE CODE AND CONTROL SURVEILIANCE CESERVE CODE AND CONTROL SURVEILIANCE CESERVE CODE AND CONTROL SURVEILIANCE CONTROL SURVEILIANCE CODE TON ELEMENT	THE OR EXPLOSION AFTRE	
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PAI PROGRAM ACTIVITY 54 DISASTER CONTROL SURVEILIANCE 11 SURFACE SEARCH	FUNCTION	CESERVE
SSI OLMOMPISSI OLSAR IS	INO. ISNI PHOCI PAI PROGRAM ACTIVITY	11351 OLMONE! S4/DISASTER CONTROL SURVEILLANCE 12651 OLSAR (91/SURFACE SEARCH

069: OBSERVE: NATURE OF DISTRESS: SINKING

NO. ISNI PROGIPAL PROGRAM ACTIVITY	OG PA	PROGRAM	ACTIVIT	X	FUNCTION	NO. ISNI PROGIPAL PROGRAM ACTIVITY	CE INFORM	TION ELEMENT	
136 O MOMP 54 DISASTER CONTRO 266 O SAR 191 SUFFACE SEARCH	MP 54 D	DISASTER	SEARCH	SURVEILLANCE	CESEKVE	1361 OF MOMPISATER CONTROL SURVEILLANCE (CESERVE (069) NATURE OF DISTRESS: FLOODING (266) OF SAR (91) SURFACE SEARCH	DISTRESS: DISTRESS:	FLOODING	

070: OBSERVE: NATURE OF DISTRESS: AGROUND

FUNCTION SIE SUKVEILLANCE INFORMATION ELEMENT	AGROUND
CE INFORM	JISTRESS:
AN	3
IE SUKVEII	GESERVE 1070 INATURE OF DISTRESS: AGROUND
31	E 10
FUNCTI	CHSERV
INO, ISNI PHOG PAT PROGRAM ACTIVITY FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	12671 OLSAR 1911 SUKFACE SEAKCH
51	126

006: DETECT: ICE FIELD, ICE JAM

INO. ISNI PROGLERI PROGRAM ACTIVITY	1970 0110 130 ICE SURVEILLANCE IDETACT 1036 ICE FIELDS
INO, I SNI PROGLIPAL PROGRAM ACTIVITY	070 0110 130 ICE SURVEILIANCE 076 0110 131 FLOOD (ICE JAM) SURVI
INO. ISN PHOG	0110 10701

055: OBSERVE: ICE THICKNESS

FUNCTION SIE SURVETLIANCE INFORMATION ELEMENT	CESERVE (055) LCE THICKNESS
INO. ISNI PROGIPAL PROGRAM ACTIVITY FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	10741 0110 1301ICE SUKVETLIANCE (CESERVE 10551ICE THICKNESS 10791 0110 1311FLOOD (ICE JAM) SURVETLIANCE (CESERVE 10551ICE THICKNESS

010: DETECT: LARGE SUBMERGED SUBMARINE

NO. SNI PROG PA PROGRAM ACTIVITY (FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	DETECT (010 LAKE SUBMERCED SUBMARINE
FUNCTIO	TOB LEGI
	1108 0 MOMP 52 ASW SURVEILIANCE
SN PROG	O MOMP
0	1108

045: OBSERVE: SUSPICIOUS ACTIVITY: DISCHARGING POLLUTANT

032: IDENTIFY: FREQUENCY

FUNCTION STEES CRYPTISANCE INFORMATION ELEMENT	020 01AN 4/FADIO BEACON SURVEILIANCE IDENTIFY 032/FRECUENCY OF MUIO BEACON SIGNAL 165 01MSA 67/NATIONAL DATA BUOY PROGRAM IDENTIFY 032/FRECUENCY OF MUIO TRANSMISSION FREQUENCY 248 01SAR 90/ALERTING AND TOCATING SYSTEMS 1DENTIFY 032/FREQUENCY OF ALERTING/LOCATING MADIO SIGNAL
NO. SNI PROGEMA PERCENAM ACTIVITY	10201 01AN 1 41RADIO BEACCN SURVETIZANCE 11651 01MSA (671NATIONAL DATA BUOY ENGRAM 12481 01SAR (901ALERTING AND TOCATING SYSTEMS

043: OBSERVE: SUSPICIOUS ACTIVITY: TRANSFERRING CARGO

	CARGO) CARGO)
VION ELEMENT	(TKANSFERRING (TRANSFERRING (TRANSFERRING
E INFORM	ACTIVITY ACTIVITY ACTIVITY
PUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	IOBSERVE 1043/SUSPICIOUS ACTIVITY (TRANSFERRING CARGO) IOPSERVE 1043/SUSPICIOUS ACTIVITY (TRANSFERRING CARGO) IOPSERVE 1043/SUSPICIOUS ACTIVITY (TRANSFERRING CARGO)
FUNCTION	OBSERVE OBSERVE OPSERVE
NO. SNI PHOG PA PHOGRAM ACTIVITY	065 0 ELT 22 ANTI-SMUGGLING SURVEILLANCE 0085ERVE 043 SUSPICIOUS ACTIVITY (TRANSFERRING CARCO) 135 0 PSS 76 SPECIAL VESSEL SURVEILLANCE 1065ERVE 043 SUSPICIOUS ACTIVITY (TRANSFERRING CARCO) 1338 0 PSS 76 SPECIAL VESSEL SURVEILLANCE 1065ERVE 043 SUSPICIOUS ACTIVITY (TRANSFERRING CARCO)
0	1065 1195 1338

067: OBSERVE: NATURE OF DISTRESS: DISABLED OR INJURED

ATION ELEMENT	DANAGE AND INJURIES DISABLED OR INJURED DISABLED
FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	COBSERVE (067) NATURE OF DISTRESS: DANGE AND INJURIES (OBSERVE) 067) NATURE OF DISTRESS: DISABLED OR INJURED (OBSERVE) 067 (NATURE OF DISTRESS: DISABLED
NO. SNI PROGIPAL PROGRAM ACTIVITY FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	(134) O!MOMP[54]DISASTER CONTROL SURVEILLANCE COSSERVE 067] NATUKE OF DISTRESS: DAMAGE AND INJURIES 264 O!SAR 91 SURFACE SEARCH COSSERVE 067 NATURE OF DISTRESS: DISABLED OR INJURED 325 6 SAR 92 UNDERWATER SEARCH (COSSERVE 067 NATURE OF DISTRESS: DISABLED

051: OBSERVE: CONTRABAND: CHEMICAL, BIOLOGICAL, RADIOLOGICAL DEVICES

	SPECIAL VESSEL SURVEILLANCE (OBSERVE (05) (COMINABAND: CHENICAL, BIOLOGICAL, RADIOLOGICAL DEVICES
NO. SN PROG PA PROGRAM ACTIVITY	AL, BIOLGGICAL,
LLANCE INFORM	PAND: CHEMICA
N SIE SURVEI	1051 CONTINE
FUNCTIO	E (OBSERVE
YTT	SURVEILLANCE
PROGRAM ACTITUTY	ECIAL VESSEI
NO. SN PROG PAL P	1971 0 PSS 1761SPI
NO.	1197

054: OBSERVE: ILLECAL ALIENS

NO. SN PROG PA PROGRAM ACTIVITY FUNCTION SIE SURVETLIANCE INFORMATION ELEMENT 1069 OFFIT 122 ANTI-SNUGGLING SURVETLIANCE 1058 111	ION ELEMENT	
ETT [22] ANTI-SNUGGLING SUKVELLIANCE OBSERVE 054 PSS 76 SPECIAL, VESSEL, SUKVELLIANCE OBSERVE 054	SURVEILIANCE INFORMATI	LILEGAL ATIENS
FROG PA PROGRAM ACTIVITY ELT (22) ANTI-SNUGGLING SURVELLIANCE PSS (76) SPECIAL VESSEL SURVELLIANCE	FUNCTION SIE	OBSERVE 054
	NO. SNI PROCIPAL PROGRAM ACTIVITY	ELT (22/ANTI-SNUGGLING SURVELLIANCE PSS (76/SPECIAL VESSEL, SURVELLIANCE

039: OBSERVE: NUMBER OF OBJECTS PER TIME INTERVAL

	TIME	
ON ELEMENT	ESSELS PER UNIT	TIME INTERVAL
(FUNCTION SIL SURVEILIANCE INFLRMATION ELEMENT	OF TAKBALLS	COBSERVE (039 CRUMER OF VESSELS PER TIME INTERVAL
OK SIE SURVEIL	OBSERVE (039) NUMBER OF TRANSITING IOBSERVE (039) NUMBER OF TARBALLS	E 1039 INCINEER
FUNCTI	OBSERVIORSERV	OPSEKV
(NO. (SN) PROGERAL ACTIVITY FUNCTION (SIL SURVEILLANCE INFORMATION ELEMENT	1030 01BA (101BRIDGE TRAFFIC SURVEILTANCE (OBSERVE (039) NUMEER OF TRANSITING VESSELS PER UNIT TIME (155) 01MSA (65) TARBALL OBSERVATIONS (OBSERVE (039) NUMEER OF TARBALLS	[230] OFFS (79 VESSET, TRAFFIC SERVICES
NO. (SN	1030 0	1230 0

052: OBSERVE: CONTRABAND: DRUGS

FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	BSERVE 052 CCNTRABAND (DRUGS)
NO. SNI PROGIPAL PROGRAM ACTIVITY	10671 01ETA 1221ANTI-SMUGGLING SURVEILIANCE 10BSERVE 10521CCNTRABAND (DRUGS)

121

017: DETECT: ELECTROMAGNETIC EMISSION: INFRARED (1-400 THz) (300-0.75 micron)

PUNCTION SIE SURVETILANCE INFORMATION ELEMENT	DETECT (017) HEAT FROM FIRES AND EXPLOSIONS (DETECT) (017) SURFACE SEA TEMPERATURE
INO. (SNI PROGIPA) PROGRAM ACTIVITY FUNCTION SIE SURVETLIANCE INFORMATION ELEMENT	11251 01 MOMPI 54 DISASTER CONTROL SURVETLIANCE DETECT 017 HEAT FHOM FIRES AND EXPLOSIONS 1431 01 MSA 61 SEA TEMPERATURE SURVEYS DETECT 017 SURFACE SEA TEMPERATURE

071: OBSERVE: NATURE OF DISTRESS: SUNK

FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT		OBSERVE 0711 NATURE OF DISTRESS: SUNK
FUNCTION SIE SUKV		IOESEKVE 10711NATU
INO. SN PROC PA PROCKAM ACTIVITY	*****	13261 61 SAR 1921 UNDERWATER SEARCH
INO. SN PROG PA		1326 6 SAR 921

040: OBSERVE: FISHING ACTIVITY

FUNCTION STE SURVETLANCE INFORMATION ELEMENT	(038) OFELT (20) FISHING VESSEL SURVEILLANCE (OESERVE (040) FISHING ACTIVITY (GEAR AND TECHNIQUE)
INO. SNI PROGIPAL PROGRAM ACTIVITY FUNCTION SIE SURVETLANCE INFORMATION ELEMENT	(038) OFELT (20) FISHING VESSEL SURVEILLANCE (053) OFELT (21) GEAR CONFLICT SURVEILLANCE (0

044: OBSERVE: SUSPICIOUS ACTIVITY: FLEEING

N ELEMENT	EEING) EEING)
INFORMATIO	CLIVITY (FL)
FUNCTION STE SURVETLIANCE INFORMATION ELEMENT	(CESEKVE 1944) SUSPICIOUS ACTIVITY (FLEEING) (OBSEKVE, 1944) SUSPICIOUS ACTIVITY (FLEEING)
FUNCTION	OESERVE
INO, ISNI PROGIPAL PEOCRAM ACTIVITY	040 0 ET# 20 FISHING VESSEL SURVEILIANCE OESERVE 044 SUSPICIOUS ACTIVITY (FLEEING) 066 0 ET# 22 ANTI-SMUGGLING SURVEILIANCE OBSERVE 044 SUSPICIOUS ACTIVITY (FLEEING)
NO. ISN	0 10401

048: OBSERVE: FISH CATCH: SPECIES

(NO.1SN/PROC) PAL PROCKAM ACTIVITY	CAUGHT
IN	ISH
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UKVE	PECI
EIS	SIS
SIL	100
FUNCTION PROPERTY	CESENVE
TY	1041 PIETE PROFESSING VESSEL SURVELLIANCE CORSENVE 1046 SPECIES OF FISH CAUGHT
INO. ISNI PROGI PAL FROGRAM ACTIVITY	FSSE.
A.	200
PROG	FISHT
PA	1001
800	1.7
SNIE	10
No.	10411

049: OBSERVE: FISH CATCH: , FISH SIZE

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FUNCTION SIE SUKVEILLANCE INFORMATION ELEMENT	BSEK
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	ANCE IC
	VEILLANCE (C
	L SURVEILLANCE IC
	JESSEL SURVETLIANCE (C
	ING VESSEL SURVEILLANCE
	FISHING VESSEL SURVEILLANCE
	120 FISHING VESSEL SURVETLLANCE
	OFELT (20) FISHING VESSEL SURVETLLANCE (C
INO. SNI PROCIPAL PROGRAM ACTIVITY FUNCTION SIE SUKVEILLANCE INFORMATION ELEMENT	10421 OFELT 120 FISHING VESSEL SURVETLIANCE (OBSERVE 049 SIZE OF FISH CAUGHT

050: OBSERVE: FISH CATCH: QUANTITY

FUNCTION STE SURVETLIANCE INFORMATION ELEMENT		043 0 ELT 20 FISHING VESSEL, SURVEILLANCE OSSERVE 050 QUANTITY OF FISH CAUGHT
SIE		1050
FUNCTION!	1	CESERVE
		IL SURVEILLANCE
ACEL		ESSE
NO. SN PROG PA PROGRAM ACTIVITY		FISHING V
PA	-	120
SN PROG		OFELT
00		043

012: DETECT: SEA SURFACE

ENT	
N ELEM	
INO, SNI PROGIPAL PROGRAM ACTIVITY (FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT	
INFOR	NIN
TANCE	FACE FACE
KVEIL	CODED SA SUR
SIES	DETECT 012 FLOODED 1EKK UETECT 012 SEA SUKFACE DETECT 012 SEA SUKFACE
TION	555
FUNC	DETE UETE LUETE
	123 O MOMP 54 DISASTER CONTROL SURVEILLANCE DETECT 012 FILOODED 1EMMIN 150 O MSA 63 STANDARD OCEANO, SECTIONS DETECT 012 SEA SURFACE 158 O MSA 66 SURFACE CURRENT OESEKVATIONS DETECT 012 SEA SURFACE
-	UKVE11 ECT ION SEKVAT
VITY	NO. SI
ACTI	CURRE
OGRAM	SASTER ANDARD RFACE
PA PI	54 D18 63 ST/ 66 SUI
NO. SN PROG PA PROGRAM ACTIVITY	MOMP!
SS	8 0 0
3:	552

011: DETECT: SEA BOTTOM

ON ELEMENT	
E INFORMATI	
FUNCTION STEES SURVETTIANCE INFORMATION ELEMENT	(DELECT (011) SEA BOTTOM (DELECT (011) SEA BOTTOM
FUNCTIO	(DETECT
INO, SNI PROS PAI PROSPAM ACTIVITY	145 0 MSA (62) OCEAN SOUNDINGS PROCHAM (DELECT (31) (SEA BATICH [282] 61ELT (23) UNDERSEA MINING SURVEILIANCE (DELECT (31) (SEA BATTOM

041: OBSERVE: FISHERY SUPPORT OPERATIONS

FUNCTION STEELSURVEINTANCE INFORMATION ELEMENT		SERVE 1941/FISHERY SUPPORT OPERATIONS
(NO. SN PROC PROC HAM ACTIVITY	***************************************	[039] OFECT [20]FISHING VESSEL SURVEILLANCE (OBSERVE 1941/FISHERY SUPPORT OPERATIONS

063: OBSERVE: SURFACE WEATHER: PRESSURE

NO. ISN PROGIPAL PROGRAM ACTIVITY	E 10631ATMOSPIERIC PRESSURE
FUNCTIO	OBSERVE
NO. ISN PROGIPAL PROGRAM ACTIVITY	[181] OFMSA [68] SURFACE WEATHER OBSERVATIONS OBSERVE 063] AINOSPHERIC PRESSURE
NO. ST	1181

066: OBSERVE: WIND VELOCITY

FUNCTION SIE SURVEILIANCE INFORMATION ELEMENT	SERVE 366 WIND VELOCITY SERVE 366 SURFACE WIND VELOCITY
NO. SNI PROGIPAL PROGRAM ACTIVITY	1334 OFMOMP 54 DISASTER CONTROL, SURVEILLANCE COBSERVE 266 WIND VELOCITY 1841 OFMSA 68 SURFACE WEATHER OBSERVATIONS COBSERVE 266 SURFACE WIND VELOCITY

058: OBSERVE: SEAS AND SWELLS: HEIGHT

FUNCTION SIE SURVEILIANCE INFORMATION ELEMENT	AND SWELLS
3	SEAS
LIA	9
KVE I	IGHT
EIST	8 HE
151	05
FUNCTION	OBSERVE
NO. SNI PROGIPAL PROGRAM ACTIVITY	1781 01MGA 1681 SURFACE WEATHER OBSERVATIONS TOBSERVE 13581 HEIGHT OF SEAS AND SWELLS
8	1178

059: OBSERVE: SEAS AND SWELLS: PERIOD

INO. ISN PROGEM PROGRAM ACTIVITY	(179) CIMSA (68) SURFACE WEATHER OBSERVATIONS (OBSERVE 059) PERIOD OF SEAS AND SMELLS
TION SIE SURVEILL	ENE 1059 PERIOD OF
	SERVATIONS OBSE
NO. SNI PROG PA PROGRAM ACTIVITY	SURFACE WEATHER OB
NO. SN PROG PA	11791 OFMSA 1681

062: OBSERVE: SURFACE WEATHER: TEMPERATURE

FUNCTION SIEJSURVEILIANCE INFORMATION ELEMENT	ESERVE 362 SURFACE WEATHER: TEMPERATURE
NO. SNI PROGIPAL PROGRAM ACTIVITY	[180] OIMSA [68] SURFACE WEATHER CESERVATIONS [OESERVE 362] SURFACE WEATHER: TEMPERATURE

064: OBSERVE: SURFACE WEATHER: HUMIDITY

NO. SN PROG PA PROGRAM ACTIVITY FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT FUNCTION FUNCTI	FUNCTION SIE SURVEILLANCE INFORMATION ELEMENT		FACE WEATHER: HUMIDITY
SERVATIONS	FUNCTION SIE SUF		OBSERVE 064 SUB
NO. SN PROG PA			SURFACE WEATHER OBSERVATIONS
	(NO. SN PROG PA	-1111	1182 01NSA 1681S

065: OBSERVE: CLOUD TYPE

NO. ISNI PROGIPAL PROGRAM ACTIVITY FUNCTION SIE SURVETLIANCE INFORMATION ELEMENT	
SIE SURVETLIANCE	11831 OIMSA 1681 SURFACE WEATHER OBSERVATIONS TODGERVE 10651 CTOUD TYPES
FUNCTION	OPCERVE
X	CESEKVATIONS
NO. ISNI PROGIPAL PROGRAM ACTIVITY	WEATHER
PROCEA	SURFACE
NI PROG I PA	01 MSA 168
NO. IS	1183

APPENDIX I

SURVEILLANCE REQUIREMENTS MODEL: SENSITIVITY ANALYSIS

Having obtained outputs from the model (Tables 7-2 and 7-3), it is desirable to test their sensitivity to changes in input data. Specifically, how sensitive are surveillance requirements (Function/SIE weights and ranks) to changes in event timing (i.e., changes in the introductory scene for each event)? Referring to the results of the Delphi conference (Appendix D), the distribution of responses for a number of events is seen to be bimodal at some probability levels; instead of accepting a middle position between modes, the cumulative distribution function could have been altered to reflect first one mode and then the other. This could affect the trigger dates, hence the introductory scenes implied. However, significant bimodality is only observed in a handful of cases and even where it exists, changes in the implied scene would be small and rare. Consequently, this procedure would not provide a robust sensitivity test.

As a better alternative, the effect of changes in the trigger dates has been investigated. The model has again been exercised for all events using introductory scenes implied by trigger dates corresponding to both probability levels equal to or less than 0.3 and probability levels equal to or less than 0.7 (as distinguished from probability levels equal to or less than 0.5 used in the second iteration). The results of these two runs are given in Table I-1, where it will be seen that the greatest change in requirement weight/rank occurs in the first scene. Table I-2 summarizes the ranks for each SIE for each cumulative probability level. The maximum difference in rank is also tabulated. After excluding incomplete data sets, a chi square test for normality has been applied; these 52 data sets yield a chi square of 4.78 (with 2 degrees of freedom), indicating that normality cannot be rejected at the 98% confidence

level. Confidence limits may therefore be set about the mean (6.1); rank changes from 2 to 10 may be expected at an 80 percent confidence level. Small rank changes imply relative indifference to event timing; conversely, those requirements which undergo rank changes of 10 or more are most sensitive to event timing. These relatively sensitive requirements are listed in Table I-3. More complete requirement descriptions may be found in Appendix H; underlying events which cause these rank changes may be traced in Appendix F.

It may be seen that the maximum rank differences are not great, implying that SIE ranks do not change radically with changes in event timing. For this reason, the results of the Second Iteration of the Requirements Model (Table 7-2) have been accepted as a basis for further analysis in this study.

TABLE 1-1 SENSITIVITY ANALYSIS RESULTS

KEY TO COLUMN HEADINGS

SIE Surveillance Information Element code (See Table 3-2).

Surveillance Self-explanatory.

Function and SIE
Description

WT. Relative weight (normalized to 1000) of the SIE in the scene (5-year period) indicated.

RNK Rank. The relative importance of the SIE in the scene indicated.

NOTES

1. Scenes are defined as follows:

SCENE	TIME PERIOD
1	1980-1984
2	1985-1989
3	1990-1994
4	1995-1999
5	2000-2004

- Results based on scenes implied by event probabilities ≤ 0.3
 are given in the first part of the table; event probabilities
 < 0.7 are used to produce the second part.
- 3. SIE weights (non-normalized) are cumulative from scene to scene, e.g., SIE weights in Scene 2 include weights for Scene 1.

PART 1. RESULTS FOR SCENES IMPLIED BY EVENT PROBABILITIES < 0.3

SCENIE 1 SCENIE 2 ISCENIE 3 ISCENIE 4 ISCENIE 5 WT. RAW, WT. RAW, WT. RAW, WT. RAW	11 681 31 671 31 671 31 21 561 41 591 41 581 41 31 621 11 791 11 791 11 41 761 21 751 21 751 21 51 551 51 541 51 551 51	471 61 531 61 531 61 531 61 531 6 421 71 431 81 441 81 441 81 441 8 411 81 471 71 461 71 471 71 471 7	9 32 10 32 10 31 10 31 1 10 37 9 40 9 41 9 41	12 22 15 23 15 23 15 23 12 31 11 30 11 31 11 31	30 13 29 13 30 12 30 12 30 12 21 14 30 12 30 13 30 13 30 13	191	16 17 13 22 14 21 14 21 14 21 14 21 15 15 15 15 15 15 15 15 15 15 15 15 15	19 11 28 12 27 12 27 12 27 12 27 12 12 12 12 12 12 12 12 12 12 12 12 12	21 121 251 131 221 131 221 131	23 14 20 14 20 14 20 14 20 14	13 24 19 16 20 16 20 16 20 16 16 16 16 18 18 18 18 18 18 18 18 18 18	12 26 12 24 13 26 13 24 13 24 10 24 10 24 13 24 13 26	261 81 321 91 301 91 301 91	30 14 21 13 23 13 23 13	8 32 4 43 4 43 4 43 4 43 4 43 4 43	4 43 4 43 4 43 4 43	71 351 51 421 51 381 51 381 51 38 71 351 51 421 51 381 51 381 51 38 61 361 51 371 51 381 51 381	371 61 361 51 361 51 361 51 381 51 61 351 61	39 3 48 4 46 4 46 4 40 7 33 7 34 6 34 6
SCEN WT.	BEACON, ICEBERG, AFLOAT SEAPLANE				TRAP MARKER, GROWLER, DITCHED AIRCRAFT	100	GAMMA KAYS	10 di		bec	INTEREST								NG POLLUTANT
SURVEILLANCE FUNCTION AND SIE DESCRIPTION	025 LOCATE: GEOGRAPHICAL POSITION 034 OBSERVE: STRUCTURAL INTEGRITY 023 LOCATE: RANGE AND BEARING 004 DETECT: SMALL VESSEL(16'-40'), METAL BUDY, 037 OBSERVE: MOVEMENT OF OBJECT OF INTEREST	003 DETECT: MEDIUM SIZED VESSEL (40'-150') 029 IDENTIFY: TYPE 002 DETECT: LARGE VESSEL (150'+)	024 LOCATE: ALTITUDE OR DEPTH 047 OBSERVE: HAZARDOUS ACTIVITY	013 DETECT: LIQUID POLLUTANT 026 IDENTIFY: NAME OR IDENTIFYING NUMBER	005 DETECT:SWIMMER, NON-METAL BUOY, FISH TR 046 OBSERVE: HOSTILE ACTIVITY	030 IDENTIFY: COLOR 033 IDENTIFY: CHARACTERISTIC CODE	021 DETECT: NUCLEAR RADIATION: ALPHA AND BETA PARTICLES, 018 DETECT: ELECTROMACKETIC PARSICAL TIGHT (400-750 THZ)	SOLID FOLLITANT, TARBALL	DIVER (UNDERWATER SWIMMER)	042/OBSERVE: SUSPICIOUS ACTIVITY: HOVERING 038/OBSERVE: TRANSMISSION TIME SCHEDULE	019 DETECT: SOUND EMISSION IN AIR 057 OBSERVE: AREA COVERED BY OBJECT(S) OF INTE	027 IDENTIFY: FLAG (U.S. OR FOREIGN)	009 DETECT: SWALL SUBMERGED SUBMERSIBLE, MINE, SUNKEN VESSEL	015 DETECT: ELECTROMAGNETIC EMISSION: RADIO (10 KHZ-30 GHZ)	053/OBSERVE: CONTRABAND: WEARONS AND MUNITIONS 006/DETECT: ICE FIELD, ICE JAM		PROFILES: DEPTH VS TEMPERATURE PROFILES: DEPTH VS SALINITY STAFF OF OBJECT	036 IOSSERVE: SIZE OF OSSECT 036 IOSSERVE: SIZE UT ARCS 031 INFRITEVE: SUADE	045 OESERVE: SUSPICIOUS ACTIVITY: DISCHARGING FOLLUTANT 020 DETECT: SOUND EMISSION IN WATER

Mar.	SCENIE I SCENIE 2 SCENIE 3 SCENIE 4 SCENIE 5 WT. RNK WT. RNK WT. RNK WT. RNK WT. RNK	41 101 291 101 281 101 281 101 281	42 5 39 4 40 4 40 4 40 4 40	5 39 4 40 4	4 46 3 46 3 48 3	3 51 3 51 3 51 3 51 3	2 52 2 52 2 52 2 51	101 101 101 101 101 101	3 49 3 49 3 49 3	54 11 54 11 54	3 50 3 50 3 50 31	4 47 3 47 3 47 3 47	11 53 11 53 11 53 11	11 55 11 55 11 55 11	11 172 11 173 11 173 11 11	0 61 0 61 0 61 0	0 62 0 62 0 62 0 62	1 1 56 1 56 1 56 11	0 64 0 64 0 64 0	0 64 0 64 0 64 0	10 199 10 199 10 199 10 1	10 199 10 199 10 199 10 1	10 199 10 199 10 199 10 1	10 199 10 199 10 199 10	10 107 10 107 10 107 10 1	0 63 0 63 0	11 581 01 581 01 581 01	10 185 10 186 10 185	
AND SIE DESCRI NATURE OF DISTREE NATURE OF DISTREE SUSPICIOUS ACTIVI ILLEGAL ALIENS NUMEER OF OBJECTE; FRIEND OR FOE ELECTROMAGNETIC EP CONTRABAND: CHEMI ONTRABAND: CHEMI FRECUENCY CONTRABAND: CHEMI FRECUENCY SEA SURFACE SUSPICE WEATHER: WIND VELOCITY SEAS AND SWELLS: SURFACE WEATHER: WIND VELOCITY SEAS AND SWELLS: SURFACE WEATHER: WIND VELOCITY SEAS AND SWELLS: SURFACE WEATHER: CLOUD TYPE FISH CATCH: SPECI	SCEN E 1			3	- 3	<u>*</u>	-	- 3	1 31	- 2	7	7	- 2	= -	-	= -	-	_ _	ō	0	6	-	-	-	-	-	-	0	
	PTION	MISSILE, AIRSHIP	SINKING		Y: TWANSFERRING CARGO		PER TIME INTERVAL		DISABLED OR INJURED	ION: HEAT (1-400 THZ)	BIOLOGICAL, RADIOLOGICAL DEVICES			UNK	FLEEING				SSURE		CHI	90	PERATURE	IDITY		ERATIONS	S	SIZE	

PART 2. RESULTS FOR SCENES IMPLIED BY EVENT PROBABILITIES < 0.7

STE AND SIE DESCRIPTION	SCE.	WI. RNK	03 (WT. RAK	SCENIE 3 WT. RNK	E 3	SCEN E 4	48	4 SCENIE 5 NK WT. RNK	SX
034 OBSERVE: STRUCTURAL INTEGRITY	107		11 106	7	62	- 4	- 65	- 4	28	-=
	30			-	69	3	129	3	129	3
013 DETECT: LIQUID FOLLUTANT		67	3 44	9 0	22	3.	23	151	23	15
	-	164	5. 5.	. 4	55	2 5	2	1 50	55	1 5
003 DETECT: MEDIUM SIZED VESSEL (40'-150')	4	_	61 42	1	511	9	531	9	53	19
024 LOCATE: ALTITUDE OR DEPTH	4		_	_	35	10	321	101	31	101
002 DETECT: LARGE VESSEL (150'+)	-			-	46	7	46	7	47	7
029 IDENTIFY: 1YPE		_			43	œ ?	4	30 0	44	30 0
04/JOSEKVE: HAZAKOUS ACTIVITY				1	200	5	9	5	7	5
004 DEIECT: SMALL VESSEL(16'-40'), METAL BOOY, BEACON, ICEBERG, AFLOAT SEAFLANE 026 IDENTIPY: NAME OR IDENTIFYING NUMBER	NE 31	12	29 41	12	3 0	111	3.5	71	3.5	7:1
033) IDENTIFY: CHARACTERISTIC CODE	1 27	_	_	_	23	151	74	7	23	7
021 DETECT: NICLEAR RADIATION: ALMIA AND BETA PARTICLES, CAMMA RAYS	- 5	_	_		141	27	141	211	14	211
022/LOCATE: RANGE OR BEARING	1 26	_	_	_	15	19	151	191	15	19
-	- 2	_		_	181	171	201	161	20	161
007 DETECT: SOLID FOLLUTANT, TARBALL	_	_		_	12	76	121	271	121	271
005 DETECT: SWIMMER, NON-METAL BOOY, FISH TRAP MARKER, GROWLER, DITCHED AIRCRAFT	_	_	_	_	29	121	30	121	30	121
038 OBSERVE: TRANSMISSION TIME SCHEDULE		_		_	14	50	14	50	7	50
030) IDENTIFY: COLOR	-			_	13	91	15	7	5	171
018 DETECT: ELECTROMAGNETIC EMISSION: LIGHT (400-750 THZ)	_		14		18	00	18	18	8	18
014 DEFECT: CASECUS POLITIANT						33	1	33	-:	33
OZY I DEWITTER FLAG (U.S. OX FOREIGN)					77	127	77	107	7	167
040 UBBENVE: MUSTILE ACTIVITY	77	20 171	15	707	2 2	30	2 x	35	S =	35
	-	_			x	31	5	30	5	30
042 OBSERVE: SUSPICIOUS ACTIVITY: HOVERING	1				121	251	13	241	13	251
060/OBSERVE: PHOFILES: DEPTH VS TEMPERATURE	-	101 28	_		5	371	5	371	5	371
061 OBSERVE: PROPILES: DEPTH VS SALINITY	- 1		2 2	1 33	5	39	5	39	2	391
015(DETECT: ELECTROMAGNETIC EMISSION: RADIO (10 KHZ-30 GHZ)	-		4	_	13	221	13	231	13	23
035 OBSERVE: AUDIBLE/VISIBLE/RADAR MANGE					7	77	7	157	7	97
OUG DETETT: DIVER (UNDERWATER SWIMMER)		25 12	1	75	77	74	7	177	7	177
SUSPICIOUS ACTIVITIES DISCHARGING		71 34	0 1			34	• 5	000	- 3	0 0
				5 5	n 3	2 4	2 5	34	7	2 2
053 OBSERVE: CONTRADAND: WEARONS AND MONITIONS					7	321	Œ	321	20	321
	_	51 37	71 3	45	3	47	3	48	=	48
	_		_	_	e .	21	3	105	<u></u>	105
054 OBSERVE: ILLECAL ALIENS		4 39	4 .		m 0	200	m =	25	m 1	175
USGIOCOCKVE: VISIBILITY AND	_	4	-	40	5	20	ō	301	ñ	20

SIE	SURVEIL AND SI	SURVEILLANCE FUNCTION AND SIE DESCRIPTION	TION
067 OBSERVE	NATURE OF	ATURE OF DISTRESS: DIS	DISARIED OR INJURET
039 OBSERVE:	NUMBER OF	OBJECTS P	1039 CBSERVE: NUMBER OF OBJECTS PER TIME INTERVAL
071 OBSERVE:	: NATURE OF	DISTRESS:	SUNK
032 IDENTIFY: FRECUENCY	Y: FRECUENC	X	
068 OBSERVE:	NATURE OF	DISTRESS:	AFIRE
069 OBSERVE:	NATURE OF	DISTRESS:	SINKING
070 OBSERVE: NATURE OF DISTRESS: AGROUND	: NATURE OF	DISTRESS:	AGROUND
031 IDENTIFY: SHAPE	Y: SHAPE		
052 CESERVE: CONTRABAND: DRUGS	CONTRABAN	D: DRUGS	
001 DETECT:	AIRBORNE A	IKCRAFT, M	001 DETECT: AIRBORNE AIRCRAFT, MISSILE, AIRSHIP
1040 OBSERVE: PISHING ACTIVITY	PISHING A	CLIVITY	
I MAA LOBOURIDE CHORITORIC ACMITITION, DI COTAN	CICEDIOTO.	C ACMITEITHE	DI COTA

2	SE SE	T	49	521	55	47	40	40	40	35	53	28	3	57
	¥.	Ī	3	7	=	3	7	7	4	19	7	30	F	=
7 3	FOR	T	49	52	55	47	9	40	40	35	53	281	3	57
200	7	T	3	21	7	3	7	7	7	19	7	101	7	=
2	FORK	T	49	521	3	48	43	43	43	35	53	29	55	571
2	MT.	T	=	21	=	3	7	4	4	19	7	Ħ	=	=
7 3	RAK	T	47	41	51	55	48	48	48	43	46	37	57	3
2	3	T	3	7	7	=	7	7	7	7	3	19	7	=
7 2	MAK	T											21	
S CEN	M.	T	+	31	21	2	7	2	2	21	21	21	7	=
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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TABLE 1-2. SENSITIVITY ANALYSIS OF SCENE 1 SIE RANKS

	1																																					
Max.Rank Difference		- 1	9	00	9	9	10	1	1	1	1	13	===	۲,	0	۱ ۳	0	1	1	9	7	1	1	1	1	1 '	80	80	00	80	11							RIBUTION
Level 0.7	1 =	7 1	27	37	52	33	24	10	!	1	1	38	64	36	23	1 %	25	1	1	28	28	1	1	1	1	1:	41	45	45	45	43				20 3	7.00	4.03	RMAL DIST
Probability L	=	26 25	21	07	23	35	18	11	57	57	57	87	42	53	20	3 2	25	1	1	31	31	1	1	1	1	1:	45	20	20	20	67				Mean:	. 400.		CHI SQUARE TEST FOR NORMAL DISTRIBUTION
Proba	:	9 9	22	45	55	39	14	10	67	67	67	21	23	33	0 0 0	36	25	19	19	34	35	61	29	61	9	29	64	42	42	42	24		STICS	1	agon 10	Standard Doutseton.		UARE TES
SIE	8	040	042	043	770	045	970	047	870	670	020	051	052	053	900	950	057	058	650	090	061	062	063	790	990	990	190	890	690	020	071		STATISTICS	Winke	Mean.	Stand		CHI SC
Max.Rank Difference	1 ,:	2																																				
	1		0	1	2	1	3	12	6	1	1	1	80	-:	07		4	80	12	6	12	1	2	1	! '	m	1	2	2	10	10	4	1 7	4 0		1 7	2	
Level 0.7		2 «	9	11 7	18 5	!	17 3	32 12	26 9	!	1	!	8	72	97 00	: :	21 4	16 8	35 12	14 3	15 12	4 1	7 2	2 1	1:	23 3	1				44 10	13 4	11	707	, ,	1 01	42 5	
ability Level	5	10 00	9	5 11 7	13 18 5	36	16 17 3	20 32 12	19 26 9	:	!	1	7 3 8	28 22 7		47	22 21 4					3 4 1	8 7 2	1 2 1		26 23 3	1		20	87	77	17 13 4	30 31 1	30 00	2 2		43 42 5	
Probability Level	5	8 10 8	9 9	4 5 11 7	13 13 18 5	32 36	19 16 17 3	21 20 32 12	28 19 26 9	: : :	57	26			04	1 1 1 1 9		24	147	14	27				1:			6 6	15 20	41 48	54 44		27 30 31		4		43	

Chi Squarc Degrees of Freedom

TABLE 1-3. SURVEILLANCE REQUIREMENTS MOST SENSITIVE TO EVENT TIMING

Maximum Rank Difference	SIE Code	SIE Description
16	001	Detect: Airborne Aircraft, Missile, Airship
16	015	Detect: Electromagnetic Emission: Radio (10 kHz - 30 GHz)
13	051	Observe: Contraband: Chemical, Biological, Radiological Devices
12	008	Detect: Diver (Underwater Swimmer)
12	020	Detect: Sound Emission in Air
12	022	Locate: Range or Bearing
11	052	Observe: Contraband: Drugs
11	071	Observe: Nature of Distress: Sunk
10	031	Identify: Shape
10	032	Identify: Frequency
10	046	Observe: Hostile Activity

APPENDIX J

DIGESTS OF SURVEILLANCE TECHNOLOGIES (U)

CLASSIFIED. CONTAINED IN VOLUME 3.

APPENDIX K

SURVEILLANCE TECHNOLOGIES: SUPPLEMENTARY CONSIDERATIONS (U)

CLASSIFIED. CONTAINED IN VOLUME 3.

APPENDIX L

EMERGING SURVEILLANCE SYSTEMS (U)

CLASSIFIED. CONTAINED IN VOLUME 3.

APPENDIX M

SURVEILLANCE TECHNOLOGIES MODEL

CROSS-RELEVANCE MATRICES: TECHNOLOGIES vs REQUIREMENTS

Potential Technologies vs Requirements, Scene 1	M-2 to M-
Applied Technologies vs Requirements, Scene 1	M-4 to M-
Potential Technologies vs Requirements, Scene 5	M-6 to M-7
Applied Technologies vs Requirements, Scene 5	M-8 to M-9

TECHNOLOGY ,	WT :	023	004	1 034	037	1 003	1 002	1 029	1 047	1 024 1	026	005	046 1	033
ATR ACQUISTICS	78	14196	5070	%	11700	10140	8268	4290	0,	0,	0	°	1872	17472
SCHAR, PASSIVE	19	3458	2470	°,	2850	9880	8056	4180	0	1083		0	3648	00
SONAR, ACTIVE	39	14196	10140	8970	23400	10140	8268	4290	7332	17784	0	6240	7488	0
MAGNETIC FTELD	39	3549	2535	0	2925	10140	16536	0	0	0	0,	0	0,	00
S RADIO FREQUENCY	78	14196	40560	00	11700	40560	33072	8580	0	0	•	0	3744	17472
6 ELECTROMAGNETIC	39 FIELD	7098	8 20280	0	2 5850	20280	16536	8580	00	0	00	0	3744	8 8736
7 RADAR, OVER-THE-	10 HORTZO	N 1820	00	0	750	1300	2120	0	0	0	00	0	2	0
B RADAR, MEDIUM N	39 INGE	18392	20280	00	23400	20280	16536	8580	7332	17784	0	3120	7488	0
9 RADAR, MILL, METT	19 R	13832	9880	0	11400	9880	8056	8360	3572	8 8664		8 6080	3648	0
10 INFRARED	39	7098	10140	•	11700	8 20280	16536	8580	1833	4446	0	6240	3744	0
11 TELEVISION	78	14196	40560	4 35880	46800	40560	33072	34320	8 29328	2 8892	8 27456	8 24960	8 14976	17472
12 OPTICAL	78	8 56784	8 40560	35880	46800	40560	33072	34320	8 29328	17784	8 27456	8 24960	14976	17472
13 PHOTOGRAPHY	78	14196	8 40560	35880	46800	40560	33072	8 34320	14664	2 8892	8 27456	24960	7488	0
14 THAGE THTENSTFE	39 CATION	7098	8 20280	17940	23400	8 20280	8 16536	8580	3666	2	6864	8 12480	1872	8 8736
15 LASER, BLUE-GREE	19 EN	8 13832	8 9880	0	8	8 9880	8 8056	0	0	8 8664	0	8 6080	8 3648	0
16 LASER, OTHER	19	1 1832	9880	0,	8	9880	8 8056	0,	1 893	8 8664	0	6080	8 3648	0
17 ULTRAVIOLET	78	14196	5070	0	11700	10140	8268	8580	0,	0,	0,	0,	0,	0
18 NUCLEAR	78	7098	0	8970	0,	0	0	0	0	0	0	0	0,	0
19 CHEMICAL	78	0,	0	0	5850	0	0	8580	0	0	0	0	0	0
20 ANIMAL (BIRD)	19	3458	0	0	11400	4940	8056	0	0	2 2166	0	3040	8 3648	1064
ACOUSTIC ENISSI	19 ON	8	0	17480	00	0	00	0	7144	8 8664	0	0	0	0
22 MECHANICAL VIBR		6916	C	8 17480	0,	0	0	0	7144	4332	00	0	0	0
	001	273273	288145	178480	321225	329680	282172	184140	112236	122265	89232	124240	86112	88424
NORMAL		89	93	58	104	107	92	60	36	40	29	40	28	29
RANK		5	3		2					DESCRIPTION	13	9	15	13

8 CELL VALUE 17480 ___CELL PRODUCT

CELL PRODUCT - CELL VALUE X ROW WT X COLUMN WT

SIE SURVEILLANCE FUNCTION AND SIE DESCRIPTION

- O23 LOCATE: RANGE AND BEARING
 O4 DETECT: SMALL VESSEL (16'-40'), METAL BUOY, BEACON, ICEBERG, APLOAT SEAPLANE
 O25 LOCATE: GEOGRAPHICAL POSITION
 O36 OBSERVE: STRUCTURAL INTEGRITY
 O37 OBSERVE: MOVEMENT OF OBJECT OF INTEREST
 O39 DETECT: MEDIUM SIZED VESSEL (40'-150')
 O20 DETECT: LARGE VESSEL (150'+)
 O21 DENTIFY: TYPE
 O47 OBSERVE: MANAGEOUS ACTIVITY
 O48 LOCATE: ALITHUM, OR DEPTH
 O49 DETECT: SEISBLE, NOI-METAL BUOY, FISH TRAP MARKER, GROWLER, DITCHED AIRCRAFT
 O46 OBSERVE: MOSTILE ACTIVITY
 O49 DETECT: SEISBLE, NOI-METAL BUOY, FISH TRAP MARKER, GROWLER, DITCHED AIRCRAFT
 O46 OBSERVE: MOSTILE ACTIVITY
 O49 DETECT: GUARACTERISTIC CODE

NT !	013 1	19 1	28 1	018 1	022	19 1	021	008 1	015	10 1	TOTAL 1001	NORMAL	KAN
70	0	11856	0	°	11232	11856	0	°	0	0	107952	35	,
19	0	00	00	0	2736	0	00	798	0	342	39501	13	18
39	0	0	00	00	3616	0	00	3276	0	0	127140	41	,
, 19	0	0	0	00	702	00	0	00	0	0	36387	12	19
78	0	11856	00	0	5616	11856	0	0	2496	1404	203112	66	
C FIELD	0	0	0	0	2808	8 5928	0	0	1248	0	101088	33	10
10 E-HORTZO	N 0	0	0	0	360	0	0	0	0	0	6830	,	22
39 RANGE	19968	00	0	0	5616	0	0	0	00	00	178776	58	6
19 TER	9728	00	0	0	8 2736	0	. 0	0	0	0	95836	11	12
39	8 19968	00	1092	2 1482	8 5616	00	00	1638	0	702	121095	39	8
78	39936	0	8736	8 11856	8 11232	8 11856	0	1638	0	11232	464958	151	2
78	39936	00	8 17472	8 11856	8 11232	8 11856	0	1638	0	8 11232	525174	170	1
78	8 39936	00	17472	2964	8 11232	0	0	1638	0	11232	413322	134	3
1CATION	9984	00	0	8 5928	8 5616	5928	0	1 819	0	2808	183261	59	5
19 EEN	00	00	0	0	2736	00	00	1596	00	00	75772	25	13
19	0	0	0	0	2736	0	0	0	0	0	75069	24	14
78	39936	0	2184	00	2808	0	0	0	0	0	102882	33	10
78	0	0	0	00	1404	0	8 19968	0	0	00	37440	12	19
78	39936	00	00	0,	0	00	0	00	0	00	54366	18	15
19	2432	0	8 4256	8 2888	8 2736	00	0	0	00	0	50084	16	16
19 ION	00	0	0	0	684	00	0	0	0	00	47804	16	16
19 BRATION	00	0,	0,	°,	00	0	°,	0	00	0	35872	12_	19
1001	261760	23712	51212	36974	95454	59280	19968	13041	3744	38952	3083721	1000	e v
	85		17	12	31	19	6		1	13		1001	
	19 19 19 19 19 19 19 19 19 19 19 18 78 78 78 78 78 19 19 78 10 19 78 19 19 19 19 19 19 19 19 19 19 19 19 19	TE 9728 39 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 19968 19 8 19 8 39 36 78 8 39936 78 8 39936 78 8 39936 78 8 39936 78 8 39936 78 8 39936 78 8 39936 78 8 39936 78 8 39936 78 8 39936 78 8 39936 78 8 39936 78 8 39936 78 8 39936 78 00 78 39936 78 00 78 39936 78 00 78 39936	NT : 64 : 19 : 78	NT 64 19 28 78	NT : 64 : 19 : 28 : 19 : 78	THE PROPERTY OF THE PROPERTY O	NT	THE PATE OF THE PA	NAT 64 19 28 19 18 19 12 21	NT	No. 1	NT	No.



CELL PRODUCT - CELL VALUE X ROW WT X COLUMN WT

013 DETECT: LIQUID POLLUTANT
019 DETECT: SOUND EXISSION IN AIR
030 IDENTIFY: COLOR
018 DETECT: ELECTROMAGNETIC EMISSION: LIGHT (400-750 THZ) (0.75-0.4 MICRON)
021 LOCATE: RANGE OR BEARING
038 OBSERVE: TRANSMISSION TIME SCHEDULE
021 DETECT: NUCLEAR RADIATION: A_PHA AND BETA PARTICLES, GAMMA RAYS
080 DETECT: DIVER (UNDERMATER SWHENER)
015 DETECT: ELECTROMAGNETIC EMISSION: RADIO (10 KNZ-30 GNZ)
027 IDENTIFY: FLAG (U.S. OR FOREIGN)

TECHNOLOGY : WT	023	004	034	037	1 003	1 53	029	047	024 57	026	005	34	033
ALR ACOUSTICS	7098	0	0	5850	° o	4134	4290	0	0	0	0	0	17472
SONAR, PASSTVE	0	0	0	0	0	0	0	0	0	0	0,	00	0
SCHAR, ACTIVE	14196	10140	0	23400	5070	4134	2145	00	17784	0	1560	7488	0
MONETIC FIELD 39	00	00	•	00	0	00	0	00	0	0	0	0	00
MADTO FREQUENCY	14196	5070	0	11700	10140	8268	4290	0	00	0	0	0	17472
ELECTROMONETIC FIELD	0	10140	00	2925	20280	16536	4290	0	0	0	0	3744	4368
7 10 RADAR, OVER-THE-HORTZ	ON 0	00	0,	°	0	0	0	0	0	0	0	0	•
RADAR, MEDIUM RANGE	18392	10140	0	23400	20280	16536	8580	0	0	0	3120	7488	• •
PADAR, MILLIMETER	0	0	0	0	0	0	0	0	0	0	0	0	0,
10 39 INFRARED	0	0	0	11700	20280	16536	4290	0	0	0	6240	1872	0
11 78 TELEVISION 78	14196	00	0	46800	40560	33072	34320	14664	° o	27456	12480	14976	17472
PTICAL 78	28392	40560	35880	46800	40560	33072	34320	29328	8892	27456	12480	14976	17472
13 78 PHOTOGRAPHY	0	0	0	23400	40560	33072	34320	7332	0	27456	12480	3744	0
IMAGE INTENSIFICATION	. °	10140	0	11700	8 20280	8 16536	8580	1833	0	3432	6240	936	8 8736
ASER, BLUE-GREEN	0	0	0	0	0	0	0	00	0	0	0	0	00
16 19 LASER, OTHER	0	0	0	0	0	0	00	0	00	0	0	0	00
17 78 ULTRAVIOLET 78	00	0	0	23400	0	8 2 6 8	1 4290	0	0	0	0	0	0
18 78 NUCLEAR	0,	00	00	00	0	00	00	0	00	00	0	00	0
19 78 CHENTCAL	0	0	0	0,	0	0	8580	0	0	0	° o	0	0
20 ANTHAL (BTRD)	0	0	0	°,	0	°,	0	0	°	00	0	00	00
21 ACOUSTIC EMISSION	۰,	0	00	0	0	00	00	0	0	0	0	00	0
22 19 MECHANICAL VIBRATION	0	0	0,	00	00	0	0	00	0,	00	00	00	00
TOTAL 1001	106470	86190	35880	231075	218010	190164	152295	53157	26676	85800	34600	55224	82992
NORMAL	58	47	19	125	118	103	83	29	14	47	30	30	45
RANK		7	16	1	2		5	13	18	7	11	11	ARTO

CELL VALUE 17480 __CELL PRODUCT

CELL PRODUCT - CELL VALUE X ROW WT X COLUMN WT

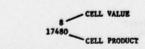
SIE SURVEILLANCE FUNCTION AND SIE DESCRIPTION

O23 LOCATE: RANGE AND BEARING
O4 DETECT: SMALL VESSEL (16'-40'), METAL BUOY, BEACON, ICEBERG, AFLOAT SRAPLANE
O25 LOCATE: GEOGRAPHICAL POSITION
O34 OBSERVE: STRUCTURAL INTEGRITY
O37 OBSERVE: MOVEMENT OF OBJECT OF INTEREST
OD DETECT: HARDIUM SIZED VESSEL (40'-150')
O29 DETECT: LARGE VESSEL (150'+)
O29 IDETIFY: TYPE
O47 OBSERVE: MAZARDOUS ACTIVITY
O24 LOCATE: ALTITUDE OR DEPTH
O26 LOCATE: ALTITUDE OR DEPTH
O27 DETECT: SERVELE, ROM-METAL BUOY, FISH TRAP MARKER, GROWLER, DITCHED AIRCRAFT
O46 OBSERVE: HOSTILE ACTIVITY
O47 OBSERVE: HOSTILE ACTIVITY
O48 OBSERVE: HOSTILE ACTIVITY
O49 IDENTIFY: GHAPAGTERISTIC CODE

CROSS-RELEVANCE MATRIX: APPLIED TECHNOLIGIES VO REQUIREMENTS, SCENE 1

REQUIREMENTS, (SIE.)

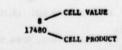
TECHNOLOGY : NT :	013 :	019 :	010 : 28 :	018 1	022 1	038 1	021 1	008 :	015 :	027 t 18 t	TOTAL 1001	NORMAL	RANK
AIR ACOUSTICS 78	0	8 11856	0	0	2 2808	11856	00	0	0	0	65364	35	11
SONAR, PASSIVE 19	0	0	00	0	0	00	° _o	0	00	0		0	14
SONAR, ACTIVE 39	00	0	0	00	1404	00	00	1638	° o	0	88959	48	7
MAGNETIC FIELD 39	0	0	0	0	0	0	0	0	00	0	0	0	14
5 RADTO FREQUENCY 78	0	0	0	e _o	5616	0	0	0	8 2496	00	79248	43	8
6 39 ELECTROMAGNETIC FIELD	0	0	0	0	2808	2964	0	0	8 1248	0	69303	38	10
7 10 RADAR, OVER-THE-HORIZO	O NE	00	0	00	0	00	0	00	00	00	0	0	14
8 39 RADAR, MEDIUM RANGE	8 .9968	0	0	0	8 5616	0	0	0	0	0	143520	78	
9 19 RADAR, MILLIMETER	0	0	0	0	0	0	0	0	0	0	0	0	14
10 39 TNFRARED	8 19968	0	0	2 1482	8 5616	8 5928	0	0	0	0	93912	31	6
11 78 TELEVISION	8 39936	0	4368	4 5928	8 11232	8 11856	0	0	0	8 11232	340548	185	2
12 78 OPTICAL	8 39936	0	8 17472	8 11856	8 11232	8 11856	0	1 1638	0	8	475410	258	1
13 78 PHOTOGRAPHY	8	0	8 17472	1 1482	8 11232	00	0	1 1638	0	8 11232	265356	144	3
14 39 IMAGE INTENSIFICATION	9984	0	0	4 2964	8 5616	8 5928	0	0	0	2 1404	114309	62	,
15 19 LASER, BLUE-GREEN	0	0	0	0	0	0	0	0	0	0			
16 19 LASER, OTHER	0	0	0	0	0	0	0	0	0	0	0	0	14
17 78 ULTRAVIOLET	8	0	0	0	1	0	0	0	0	0	0	0	14
16 78	39936	0	0	0	1404	0	6	0	0	0	77298	42	9
NUCLEAR 19 78	0	0	0	0	0	0	19968	0	0	0	19968	11	12
CHEMICAL 20 19	0	0	0	0	0	0	0	0	0	0	8580	5	13
ANIMAL (BIRD) 21 19 ACOUSTIC EMISSION	0	0	0	0	0	0	0	0	0	0	0	0	14
22 19	0	0	0	0	0	0	0	0	0	0	0	0	14
MECHANICAL VIERATION	0	0	0	0	0	0	0	0	0	0	0	0	14
TOTAL 1001	209664	11856	39312	23712	64584	50388	19968	4914	3744	35100	1841775	1000	
NORMAL	114	6	21	13	35	27	11	3	2	19		999	
RANK	3	21	15	19	10	14	20	22	23	16.			



CELL PRODUCT - CELL VALUE X ROW WT X COLUMN WT

013 DETECT: LIQUID POLLUTANT
019 DETECT: SOUND EMISSION IN AIR
030 IDENTIFY: COLOR
018 DETECT: ELECTROMAGNETIC EMISSION: LIGHT (400-750 THZ) (0.75-0.4 MICRON)
021 LOCATE: RANCE OR BEARING
038 OBSERVE: TRANSMISSION TIME SCHEDULE
021 DETECT: NUCLEAR RADIATION: ALPHA AND BETA PARTICLES, GAMMA RAYS
080 DETECT: DIVER (UNDEWATER SWINDER)
015 DETECT: ELECTROMAGNETIC EMISSION: RADIO (1C KHZ-30 GHZ)
027 IDENTIFY: FLAG (U.S. OR FOREIGN)

AIR ACCUSTICS	70	14560	6930	0	10080	9800	8680	4060	0	0	0	0	2800	16800
2 SONAR, PASSIVE	15	7280	6930	•	5040	19600	17360	8120	0	1435	0,	0	11200	00
SONAR, ACTIVE	35	14560	13860	5320	20160	9800	8680	4060	7560	11480	00	5600	11200	0
A MAGNETIC FIELD	35	3640	3465	0	2520	9800	17360	0	00	0	0,	0	0	°,
S RADIO FRECUENCY	70	14560	55440	0	10080	39200	34720	2 8120	. 0	0	0	0	5600	16800
6 ELECTROPAGNET 10	35 FIELD	7280	27720	0	5040	19600	17360	8120	0	0	0	0	5600	8400
7 RADAR, OVER-THE	18 -HOR120	N 3744	0	0	1 1296	2520	4464	0	0	0		0	1440	0
B RADAR, MEDIUM I	35 WNGE	29120	27720	0	20160	19600	17360	8120	7560	11480	0,	2 2800	11200	0
RADAR, MILLIMET	35 TER	8 29120	27720	0	20160	19600	8 17360	8 16240	7560	8	0	8	8	0
10 INFRARED	35	7280	13860	0	10080	8	8 17360	8120	1 1890	2 2870	0	5600	5600	0
11 TELEVISION	70	14560	55440	21280	40320	39200	34720	32480	30240	2 5740	8 22960	22400	8 22400	8
DPTICAL	70	58240	55440	21280	40320	39200	34720	32480	30240	11480	8 22960	8 22400	22400	8 16800
13 PHOTOGRAPHY	70	14560	55440	21280	40320	39200	34720	32480	15120	2 5740	22960	8 22400	11200	٥
14 THAGE INTENSIF	35 CATTON	7280	27720	10640	20160	19600	17360	8120	3780	2870	5740	11200	2800	8400
15 Laser, Blue-Gri	18 EN	8 14976	8 14256	0	10368	8	8928	0	0,	8 5904	0	5760	8 5760	0
16 LASER, OTHER	18	8 14976	8 14256	0	10368	10080	8 8928	0	972	8 5904	0	8 5760	8 5760	0
17 ULTRAVIOLET	70	14560	6930	0	10080	9800	8680	8120	0	0	0	0	0	0
18 NUCLEAR	70	7280	0	5320	0	0	0	00	0	0	0	0	0	0
19 CHEMICAL	70	0	0	0	5040	0,	00	8120	0	0	0	0	0	0
20 ANIMAL (BIRD)	35	7280	0	0	20160	9800	17360	0	0,	2 2870	0	5600	11200	2100
21 ACOUSTIC EMISS	35 ION	8	0	8 21280	0	0	0	0	15120	11480	0	0	0	0
22 MECHANICAL VIBI		4560	0	21280	0	0	00	0,	15120	5740	0	0	0	0
TOTAL	999	328536	413127	127680	301752	346080	326170	186760	135162	96473	74620	120720	147360	86100
NORMAL		104	131	41	96	110	104	59		31	24	38	47	27

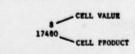


CELL PRODUCT - CELL VALUE X ROW WT X COLUMN WT

SIE SURVEILLANCE FUNCTION AND SIE DESCRIPTION

O23 LOCATE: RANGE AND BEARING
O4 DETECT: SMALL VESSEL (16'-40'), METAL BUOY, BEACON, ICEBERG, AFLOAT SEAPLANE
O25 LOCATE: GEOGRAPHICAL POSITION
O34 OBSERVE: STRUCTURAL INTERRITY
O37 OBSERVE: MOVIENT OF OBJECT OF INTEREST
O3 DITTECT: MEDIUM SIZED VESSEL (40'-150')
O20 DETECT: LARGE VESSEL (150'+)
O21 DETECT: LARGE VESSEL (150'+)
O22 DETECT: LARGE VESSEL (150'+)
O23 DETECT: LARGE VESSEL (150'+)
O24 LOCATE: ALTITUDE OF DEPTH
O25 DETECT: SWIFTLE ALTITUDE OF DEPTH
O26 DETECT: SWIFTLE, NON METAL BUOY, FISH TRAP MARKER, GROWLER, DITCHED ALECRAFT
O46 OFFICERYE: HOSTILE ACTIVITY
O33 IDENTIFY: CHAPACITALISTIC CODE

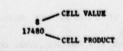
TR ACOUSTICS		0		0	0			0	0	C	0			
			14560	0		11200	10080	0	,			109550	35	,
CHAR, PASSIVE		°			°	3600	°.		1190	°	595	84350	27	13
OWR, ATTVE		0	0	0	0	3600	0	0	2380	0	0	120260	38	
AGETIC FIELD 31		0	0	00	0	700	°,	0	0	0	0	37485	12	19
ADTO FREQUENCY		0	14560	0,	0	5600	10080	0	0	9520	1190	225470	72	
LECTROMONETIC F	ELD	°.	°,	•	0	2800	5040	00	00	4760	0	111720	35	,
NOAR, OVER-THE-H	RIZO		0	°.	0	720	. 0	0	0	0	0	14184	,	22
ADAR, MEDIUM RAN	3	8	0	0		8 5600	0	0	0	0	0	169120	54	
ADAR, MILLIMETER		8	0	0,	0	8 5600	0	0	0	0	0	185640	59	,
O 31		8 8400	0	1 875	2	8 5600	0	0	1190	0	1 595	110600	35	
1 70		8	0	7000	13440	11200	10080	0	1 1190	0			127	***
2 70								0	1	0	9520	427770	1 36	2
3 70		16800	0	14000	13440	11200	10080	0	1190	0	9520	484190	154	1
MAGE INTENSIFICA		16800	0	14000	3360	11200		0	1190	0	9520	371490	118	3
		4200	0		6720	3600	5040	0	595	0	2380	170205	54	6
ASER, BLUE-GREEN		0	0	0	0	2880	0	0	1224	0	0	80136	25	14
ASER, OTHER		°	0	0	0	2880	0	0	0	°	°	79884	25	14
TRAVIOLET 70)	16800	0	1750	0	2800	0	0	0	00	0	79520	25	14
B 70	,	0	0	0	0	1400	0	10080	0	00	0	24080		21
9 70 HENTCAL	,	16800	0	0,	00	0	00	00	00	0	0	29960	10	20
O NIMAL (BIRD)		2100	°,	7000	6720	8 5600	0	0	0	0	0	97790	31	12
COUSTIC ENISSION	,	0	0	0	0	1400	0	0	0	0	0	78400	25	14
2 ECHANICAL VIBRAT		0	0	0	0	0	0	0	0,	0	0	56700	18	18
TOTAL 999		15500	29120	44625	45360	105180	50400	10080	10149	14280	33320	3148504	1001	10
NORMAL		37	,	14	14	33	16	3	3	14280	11	3748304	1000	
RANK		11	20	17	17	12	16	22	22	21	19		1000	



CELL PRODUCT - CELL VALUE X ROW WT X COLUMN WT

013 DETECT: LIQUID POLLUTANT
019 DETECT: SOUND EMISSION IN AIR
030 IDENTIFY: COLOR
018 DETECT: ELECTROMAGNETIC EMISSION: LIGHT (400-750 TMZ) (0.75-0.4 MICRON)
020 LOCATE: RANGE OR BEARING
031 DETECT: RANGE OR BEARING
031 DETECT: NUCLEAR RADIATION: ALPHA AND BETA PARTICLES, GAMMA RAYS
041 DETECT: DIVER (UNDERWATER SWIPMER)
052 DETECT: ELECTROMAGNETIC EMISSION: RADIO (10 KHZ-30 GHZ)
053 DETECT: FLAG (U.S. OR FOREIGN)

TECHNOLOGY . WT	023	: 004 : : 99 :	034	037	003	002	029	047 1	024	026	40 1	046 .	033
ATR ACOUSTICS 70	7280	0	0	5040	0	4340	4060	0	0	0	0	00	16800
SCHAR, PASSIVE	°.	0	0	°	00	0	°	0	0	0	0	00	0,
SONR, ACTIVE	14560	13860	60	20160	4900	4340	2030	0	11480	0	1400	11200	0
MAGNETIC FIELD 35	°.	0	00	0	0	0	0	0	0	0	•	0	0
S RADIO PRECUENCY 70	14560	6930	00	10080	9800	8680	4060	00	00	00	0	00	8
ELECTROMONETIC FIELD	00	13860	00	2520	19600	17360	4060	00	00	0	°,	5600	4200
7 RADAR, OVER-THE-HORIZ	ON 0	. 0	0	0	0	00	0	0	00	0	°,	0	0
RADAR, MEDIUM MANCE	29120	13860	00	20160	19600	17360	8120	0	0	0	2 2800	11200	0
9 35 RADAR, MILLIMETER	0	°,	0	0	0	0	0	0	0	0	0	0	0
10 35 INFRARED	۰,	•	00	10080	19600	17360	4060	0	0	0	3600	2 2800	0
11 70 TELEVISION	14560	0	00	40320	39200	34720	8 32480	15120	00	8 22960	11200	22400	8
12 70 OPTICAL	29120	35440	21280	40320	39200	34720	8 32480	30240	5740	8 22960	11200	8 22400	8
13 70 PHOTOGRAPHY	00	0	00	20160	39200	34720	32480	7560	0	8 22960	11200	5600	0
14 35 UNAGE INTENSIFICATION	0	13860	00	10080	19600	8 17360	8120	1 1890	0	2 2870	5600	1 1400	8 8400
15 LASER, BLUE-GREEN	0	0	0	0	0	0	0	0	0	0	°,	00	00
16 LASER, OTHER	0	00	0	0	00	0	0	0	0	0	0	00	00
17 70 ULTRAVIOLET	00	0	00	20160	0,	8680	1 4060	0	0	0	0	0	. 0
18 70 NUCLEAR	00	0	°	0,	0,	0	00	• 0	00	0	0	0	00
19 70 CHENICAL	00	00	0	0	0	0	8120	0	00	0	00	0	00
20 ANIMAL (BIPD)	00	0	00	0	00	00	00	0	00	00	0	00	00
21 35 ACOUSTIC EMISSION	00	0,	0	00	0	°,	0	00	00	0	0	00	00
22 15 MECHANICAL VIBRATION	00	00	00	0,	00	00	0	00	00	00	0	00	00
TOTAL 999	109200	117810	21280	199080	210700	199640	144130	54810	17220	71750	49000	82600	79800
NORMAL	65	70	13	118	125	119	86	33	10	43	29	49	47
RANK	6	5	18	3	1	. 2	4	12	19	10	13		,



CELL PRODUCT - CELL VALUE X ROW WT X COLUMN WT

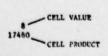
SIE SURVEILLANCE FUNCTION AND SIE DESCRIPTION

O23 LOCATE: RANNE AND BEARING
O04 DETECT: SMALL VESSEL (16'-40'), METAL BUOY, BEACON, ICEBERG, AFLOAT SEAPLANE
O25 LOCATE: GEOGRAPHICAL POSITION
O14 OBSERVE: STRUCTURAL INTEGRITY
O17 OBSERVE: HOVEMENT OF OBJECT OF INTEPEST
O18 DETECT: HARDIUM SIZED VESSEL (40'-150')
O29 DETECT: LARGE VESSEL (150'+)
O29 IDENTIFY: TYPE
O47 OASIEVE: HAZARDOUS ACTIVITY
O24 LOCATE: ALTITUDE OR DEPTH
O26 IDENTIFY: NAME OR IDENTIFYING NUMBER
O55 DETECT: SUPPLIE ACTIVITY
O46 OBSERVE: HOSTILE ACTIVITY
O47 OASIEVE HOSTILE ACTIVITY
O48 OBSERVE: HOSTILE ACTIVITY
O49 IDENTIFY: GHAPPATERICITE CODE.

CROSS-RELEVANCE MATRIX: APPLIED TECHNOLOGIES V& REQUIREMENTS, SCENE 5

REQUIREMENTS (SIE.)

- HNGLOGY	MT i	30 1	019 :	25 1	24 1	20	18 1	021 ; 18 ;	17	17	17 1	TOTAL 999	NORMAL	RAN
IR AUDITICS	-0	0	14500	0	0	2800	10080	0	0	0	0	64960	39	10
CNAR, PASSIVE	35	0	0	0	0	0	0	0	00	0	0			10
CHAR, ATIVE	35	0	0	0	0	1400	00	0	1190	°e	00	86520	51	
AGNETIC FIELD	35	0	0	0	0	0	0	0	0	0	0	0	0	14
ADTO PRECUENC	70	00	0	0	00	5600	0	°,	0	9520	0	86030	51	
LECTROMACNET	35 C FIELD	• •	0	0	0	2800	2520	0	0	4760	0	77280	46	,
ADAR, OVER-TH	18 E-HOR130	N 0	: 0	0	0	0	0	0	°.	0	0	0	0	1
ADAR, MEDIUM	35 RANGE	8400	0	0	0	5600	°,	0	0	0	0	136220	61	
ADAR, MILLIME	15 TER	0	0	0	0	0	0	0	0	0	0	0	0	1
0 NFRARED	35	8400	0	0	2 1680	8 5600	8 5040	0	0	0	0	80220	48	
ELEV TON	70	8	0	3500	6720	8	10080	0	0	0	9520	307580	183	
2 PTIC S	70	16800	0	14000	8	8	8	0	1 1190	0	9520	438130	260	
3 HOTOGRAPHY	70	8	0	8	1 1680	8	0	0	1 1190	0	8 9520	228270	136	
4 MAGE INTENSIF	35	4200	0	0	3360	8 5600	5040	0	0	0	2		65	
S ASER, BLUE-GR		0	0	0	0	0	0	0	0	0	0	108570		
6 ASER, OTHER	18	0	0	0	0	0	0	0	0	0	0	0	0	1
,	70	8	0	0	0	0	0	0	0	0	0	0	0	1
ETRAVIOLET 8	70	16800	0	0	0	1400	0	8	0	0	0	51100	30	1
UCLEAR 9	70	0	0	0	0	0	0	10080	0	0	0	10080	6	1
HEMICAL.	15	0	0	0	0	0	0	0	0	0	0	8120	5	1
NIMAL (PIRD)	15	0	c	0	0	0	0	0	0	0	0	0	0	1
COUSTIC BAISS	15	0	0	0	0	0	0	0	0	0	0	0	0	1
FCHANICAL VIB	RATION		c_				0					0	0	1
TOTAL	999	88200	14560	31500	26880	64400	42840	10080	3570	14280	29750	1683080	1001	
NORMAL		52	,	19	16	38	25	6	2	8	18		1000	



CELL PRODUCT - CELL VALUE X ROW WT X COLUMN WT

013 DETECT: LIQUID POLLUTANT
019 DETECT: SOUTH EMISSION IN AIR
030 IDENTIFY: GOLOR GENESSION IN AIR
030 IDENTIFY: GOLOR GENESSION: LIGHT (400-750 MHz) (0.75-0.4 MICRON)
021 LOCATE: RANGE OR BEARLING
038 OBSERVE: TRANSMISSION TIME SCHEDULE
021 DETECT: NUCLEAR RADIATION: ALPHA AND BETA PARTICLES, CANNA RAYS
040 DELECT: DIVINE (UNDERWATER SWIPPINE)
015 DETECT: ELECTROMAUNETIC EMISSION: RADIO (10 KNZ-30 GHZ)
027 IDENTIFY: FLAG (U.S. GR FOREIGE)